Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION
PART V
(1911–1919)

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START

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A Note on the Sources
The pages which have been filmed are the best copies available. Every technical effort possible has been made to ensure legibility.

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NOTEBOOK SERIES
NOTEBOOKS BY EDISON

Notebook Series -- Notebooks by Edison
Notebook, N-13-11-22

This notebook was used by Edison during November-December 1913; one entry contains notations by an unidentified experimenter. The entries relate to a sequence of experiments, numbered from 15 to 90, which continue the experiments in N-13-08-14.2. They pertain primarily to the printing and transfer processes involved in disc record manufacture. Included are notes and results from experimental batches of transfers made according to different production schedules, different varnish compositions, or different preparations of the record blanks. Also included are descriptions of the various scrapers used in the preparation of the record blanks. Entry 55 directs Sherwood T. (Sam) Moore that "for present this is our Transfer & Printing Schedules." Another entry describes Charles Dally's "slot screen" experiments, which were intended to improve the quality of the screening of powder for the powder blanks. At the end of the book is an entry on the testing of "Dinwiddie's grafited tracked White Masters." The notes indicate that Walter H. Miller and Ernest C. Richter also assisted in the experiments. Inserted into the book are two loose pages of related notes by Edison. The front cover is labeled "Disc Records." The pages are unnumbered. Approximately 150 pages have been used.

No 15 Schedule

3 Minutes at 500 lbs with steam
Coal. 3 plates —

Many Buds III Has also outer red bud row

One has row red breaks over
nearly the entire circumference

Special Expt

2 C
1 Low
5 High 900 lbs – pressure not held but allowed gradually die down to 125 lbs

QK
Bird III shallow

No 16

No Contact at Top press
press 1/16 from touching. Hot
for 7 min then bring
up. to 800 lbs for
5 min + Cool

free 1
Stick 11

Transfers 6

OK 11

Towards Top — 111

Towards Bottom 1

Red Centers Not Cod.

17 Expt

2 Control 1 Low 5 high 800

then drop press + cool.
free release

OK.

Tops bad — bottoms pretty good

Study these —
Very Important

after transfer

1	plates	1/16 – see ridge plain
2	"	1/8
3	"	1/16
4	"	straightened up 1/16 –
5		1/8 shoulder Lewis — no (sup) at rivet but is one at 2 1/2"
6		1/8 – 1/16 –
7		1/8 —
8		straightened up one way
9		low in center
10		nearly flat.
11		1/16
12		1/8 .

This shows plates about straightened up — after reject off

Prints.
OK II
Not filled with rivets III inside edge Lubed
Cracks I

This proves plates after this Rivet Bad —

No 17 1/2

No 1 Schedule water
3 Contact y rim at 800 – Coal.
Plates scaled for Thickness
Varnish outer Edge

1 =	ⓞ	thick	1/8 higher in Center on back
2	"		1/8 "
3	"		1/16 "
4			1/8 – 1/16 "
5			1/8 – 1 rivet near a rivet – plate 1 rivet 2 1/2 from hole
6			1/8 – 1/16. "
7			1/8 "
8			1/8 " has rivet 3/8 of Edge
9			1/8 1/16
10			1/16 – "
11			1/16 "
12			1/8 "

6 Transfers –
OK III

Steam pressure was 108 Lbs –

Crack (Red) Cancel

83 1/2 Rivets

This looks good

Should try

10 min on 600 RB-1
10 " 700 " not as good as 600
10 " 800 " not using gold

Probably best is
500 @ 600

18 Sept

10 min on 500 lbs -
free Whl

OK ||| IIII 9

May be OK ||

Much better than the 7 min contact only.

Proto 6 66%

OK IIII
Not filled in Center Music 1.
Cracked in label 1

(A)

They sound pretty good
Mostly velvet & only
1 head run out to amount
to anything —

We now put the 4 that has birds - Double transfers

No 19

No 1 Schedule

3 Coulard ½ high 800

210 Degrees Fahr baked plates —

Green HH
Stuck 1

OK 11 Red Cedar

Birds both sides 1
Birds one side III

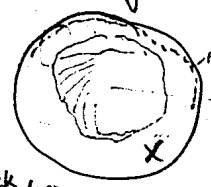
35 a/o

WQ on this schedule

and do not really get
225 Fahr — work welded

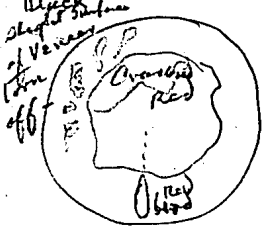
Dup work
25 lbs Steam pressure

Transfer — Free Stick III

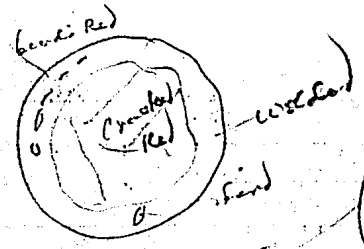


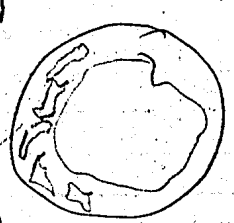
Bottom of press gets more heat, transfer better, less Red —

Others about same



1/2 to 1/4 around knife, powder off blank welded + pulls off —





Partial clean up Top of Veneer

No 20 (15) Specially picked flat plate Even flow

Use only 5 to 8 lbs steam pressure

Warm up platten 5 min before putting in knives

5 min Contact.
7 " 800 lbs —
Cool. only use 5 lbs steam —

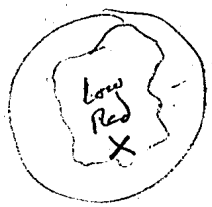
New Machines Blanks — Reg Vare —

Transfer.
Squirted + impressed one edge 1 — } 1 Blank
" " + Cracked Blank 1 }

2" Long

Another just clears edge C no only steam just impress on one shine — ditto — The veneer no plastic air at equals heat 800 lbs dont bring plank in effected 1 shows traces contact at 2 edge 1 @ 1½ in heat where no contact raises left plate + Cracked clears Cools

Moore thinks on account of low pressure we get back pressure from other press



fine-

IIII

There is promising if we can get X up retap reed will get good transfer and no bridge Feed GEAR

~~We change the feed cam~~
~~25 lbs~~ ~~of 5~~

Specially picked good plate
#021 — (1è) Even flood

New machine blanks Reg plates

7 min contact —
Then run up to 800 lbs
& then mount needle & raise
800 lbs go back to contact
& cool — go

Free IIII
Slick -

Transfer —

OK None not enough
felt at Centers Edges
OR fine —

Note for #033

better than 22 for 33 work

No 1 - bend 1/16 x 1/8 3/4 from edge points to center other side -
1/4 red band - in place - 1/4 from edge
Red Center - 4@ 4½ dia -

2 - bend 3/32 dia 1/4" edge

3 3/32 x 1/16 ø ▯ 1/2" edge points toward and point touches rim
Center low - second color small
band - otherwise OK -

4 bird ▽ 3/16 x 3/32 points toward hole
best sharp end towards rim
other side OK -

Print -
OK All over 11 black
all filled. 1
Creek in middle 1/2 way 1
Red Center filled Edges least } 11
Point middle not quite filled }
peculiarly in Edges
filled

No 22 Corn flow plate

7 Min Contact then
run up to 800 lbs the
moment the needle touches
800 lbs Cut off steam &
Cool keeping pressure at
800 lbs

Use Machine Made Blanks
& Reg Transfer plates
from Hill
Slick

OK - 1

Birds both sides - 1
Bird one side 1

There is less red than 21 but of
Black BE got perfect Think
21 BE better as there won't BE
bends — all the dif between
21 & 22 is that 22 has less
red. it originally was bad as 21
but longer pressure Reduced the area
but original defect there but covered

Dalleys Transfers

Baked 5½ hours Reg
Crew — 228 Fahr.

768 Made 615 OK —
153 discards —

80%

Proofs of 23 = 1st Lot.

OK I

possibly Comes ~~~ conv HHI

Doubt is chipping on Edging

Due to not quite falling on Extreme Edge.

No 23. Evenflow plates

3 Min Contact — Reg Steam Press

7 " 800 lbs —

The plates used have been made Matte by Emery Cloth —

Use Machine Moulded Blanks

free IIII
Stuck I

OK HII

Bind 3/4 from edge & round sied. I

83%

Duplicate

free HII
Stuck

OK - IIII

Bind one side I

Binds both sides I

66

Average 74½%

Transfers on hand - Dry

		235	1430
		210	302
Req	Baked	160°	200
		200	134
		260	49
	Flavored	60 cc	35
		70 cc	190
		90 cc	51

730 - ~~Dehydrated Resin 450°~~ 159 100 gms
2 Para 4 Penta 3 6/4 - 145 alcohol

731 - 100 gms Dehydrated 450° 142
2 para 4 penta 3.5. 6/4 145 al-

732 100 ~~Dehyd Resin 450~~ 167
2 para 4 penta 4 6/4 145 al

733 100 Dehyd Resin 450° 200
2 Para 4 penta 45 6/4 145 al

734 - 100 Dehy resin 450 200
2 para 4 penta - 5 6/4 - 145 al

735 - 100 Dehy resin - 157
2 para 4 penta 5.5 6/4

165 ✱

736 100 Dehy 480°
2 para 4 panka 6 6/4 - 145 al

724 Reg Resin — 100 — (221) - 213
2 para 7.4 6/4 4 panka 145 al

725 - 100 Resin (221) 2 Para 4 panka
7 6/4 145 al
245

726 100 Resin 221 - 2 Para 6 panka
7 6/4 - 145 al —
198

737 100 Dehy 480 26 ✱
2 para 12 Panka 5 6/4 145

722 - 100 Resin (206) - 1.4 phenol 34
7.9 6/4 - 2 Para 4 panka 145 al
1/4 Zinc Chl -

678 100 Resin 161 - 3.9 phenol 12 ✱
8.4 6/4 2 Para 10 Panka 145 al

741 — 100 Ethyl 480 148
8 6/4 20 Penta 2 para
3 Dichloronaphthalene 1445 al

742 1 gal Req Van 20 grams
Phosphine 11 58

742 B 1 gal Req V 189 grams
Phosphine 11 —

650 — 100 Resin 191 23
2.9 phenol 7.9 6/4 2 para
4 Phthalimide 148.4 al

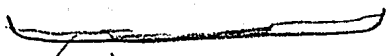
651 100 Resin 191 22
2.9 Phenol 8.5 6/4 2 Para
4 phthalimide — 148.4 al

652 100 Resin 7.9 6/4 2 25
para 2.9 Phenol —
4 Phenylphthalimide 148.4 al

699 – 100 Ream 186
3.4 phenol 7.9 Ce/4 2 Para 26
4 penta 140 cal – Viscosity
1 min 4 sec

~~699A – Dump 699 Except~~ 10
~~130 grms cal – Viscosity~~
~~16 Ream 44 sec~~

Note, the Even flow plates - Range can still be seen 1½ to 2½ from Edge - There is dif of 003 -



Ring -

This is called Even flow plate but is not its 25% thinner -

This yellow Edge we noticed on print on chart schedule 1000 lbs order want heat at Contact & Check blank not off Edge

No 24 Even flow plates

20 lbs steam -

7 min contact -
Run up to 1000 lbs for 1 minute then back to contact -
Coal.

Stuck 11 free

Yellow Edge, Some places 3/16 wide - all around Edge - Note this - all have this -

Red Centers - places nearly to Edge around, Cracked bad in Red Centers stuck to plate in some cases where cracked in red Centers -

Cooks away from plate Noticed this already low temperatures -

1 has a blackband
1 " now red bands 1/4 from rim

1/4" all around Edge shows perfect weld - Edge Too high -

No 25 -

10 Penta - 8.4% 6/4

Use ~~666~~ 678 Varnish Plates

3 min Contact

7 min 800 lbs - Coal free HH

Birds bath added HH

Birds one made I

Note Excess Penta makes Birds,

12% - Penta & 5 6/4 Wood handle above with 10% Penta but 8.4 6/4 is OK but for Birds -

Duplicated
By Mistake —

Rotten —

1026

Use 737 Varnish plates

3 Mm Contact
7 " 800 lbs —

Some slack

Full binds and row around Edge
Terrible pull outs,

One board Example saved,

About 1/2 of Var pulls off after
half steps at the rear of
mm press rolls, —

Rotten —

Not enough 6/4 + too
much Pepsa —

27-

6 printed cards 8½ inch
Extra plate 10/inch block on top
of transfer

3 Contact
7 min 800-1.60 -

29-

It looks as of birds was due to Low 6/4 Should have Dehydrated and 8 To 9 6/4 I guess

28-

Dehyd 3% 6/4 only only clamps

730 Blanks —

3 Contact

7 Mm 800 lbs-

All — Free steel Shuckhard

OK

Birds one side 1

" both sides -

Rotten — not hardened — 6/4 too low —

Birds on 6/4 blanks

Note 29 - 4%

Make them good

29-

Use 732 plates, neco 6 Cans
Dichy 4% 6/4, 2 parts 4 Peroxide

3 Contact
7 High - 600 16s —
Very Hard Stuck LHH

OK IIII

Bind one side II -

PHENOMENON 66⅔

Print

OK - II
Not filled Gatherdes II
Not filled small crack I
(Edge of fall
Edges Cracks I

30

Use 735 Derby 5.5% 6/4 —
Nice blanks —

3 Contact
7 Height at 800 CGS

Three III
Shuck III

OK

Birds both sides III I

Very Good long row red
Edged - Good blanks —

Curious 3% ~~6/4~~ - not hard enough
4½% " hard and good
but shuck bad
5.5 Like 3% hard
but nice condition Very
Good —

31

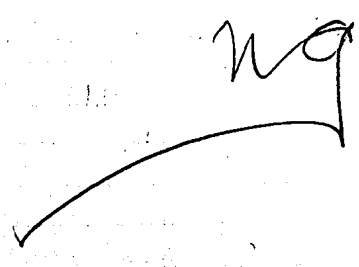
725 ~~Crank~~ plates
Delighted 7/- 6/4

3 Contact
4 Knight - 800 lbs
OK. None —

Free II
Clear IIII

Bird one side I
Birds both sides III

Red ring bands at Edge I



Dehydrated
Resin seems
NG

726 platelets & petula Delay Resp
7% 6/4 —

3 Centrel
4 through Gas
Slick — 11

Black Tear bands
Yellow bands —
Edges bands long —
Cracked or cracks for drawn
} all bad

NG I was OK on inside

Red Center 1

Although more 6/4 the
Pauls is greater
May be pre-phenol —
pheomy

Notice - the one print from seperated transfer are Red nearly all over — we reprint 2pp. no better for surface still Red

2 sheets came free off plates in bringing Varnish over put them over a blank & printed Records

Record OK fair to good, surface No Rots -
Dalley is trying make it practicable to chill off -
Direct Cut on Rapidex -
RO are short & sharp.

Surfaces -

1 - Loud	fair	good	faint	Bad RO
2 "	"	"		
1 "	good	good	Start Bad RO	
2 "	fair	good	Bad ROuts	
1 "	fair to g	good	S + M Bad RO	
2 good	good	good	Bad RO allows	
1 good	good	fair	S + M Bad RO	
2 fair	good	fair	S only Bad RO	

The Varnish too Heavy on Start squirted out too much on transfer — makes Runouts

Reprint it 3rd time, 2 heat 2 contact + 7 high 1000 lbs — to clear road. — Print no better oil stops welding

33.

Possibly Scum prevents welding -
Use Dalley Sesame plates,
showed the underside up on Printing & also developed with Benzyl Ac
3 Contact.
7 High 800 lbs

OK IIII
Free IIII
Stuck

All OK 100% -

Print =
OK. IIII
100%

not quite filled at Edge on some — Can fix this -

Notes on transfers -
good fill No Red Centers - squirts out Edge Considerable - (1/2) Varnish
1 has shade red Center -
Varnish squirts at Edge 1/4" or more
Moore & Cecil Ammonia
Too much dichromate to Varnish makes RO

Where there is great squirting of Veneer, we get Run outs I think —

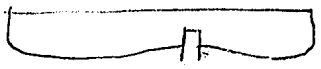
Records

	Start	Mid	End			
1	Loud	fair	good	RO	RO	faint
2	good	fair	good	no	RO	no
1	good	fair	good	no	no	no
2	good	good	good	Bad,	RO.	no
1	good	good	fair	} — no RO		
2	fair	good	good			
1	Loud	Loud	fair	— RO	RO	faint
2	"	fair	good	RO	no	no

Dumm

Not near as bad RO
as 33 — didn't squirt out
Like 33 —

34



4 New bowed scraper
to 21 scraper —

Rep plates —
3 Contact
4 High 800.

OK 11

Tree 11
Stuck 1

One side Burned 11

Red Centers, No Red Centers,
Edges look good —

50%

Print —
OK 1111 — 100%

20K hour crank —
Evidently

No 35

Use 699 plates 16 mm 44 sec
Viscosity Reg Vare

3 Contrast
4 High - 800 lbs —

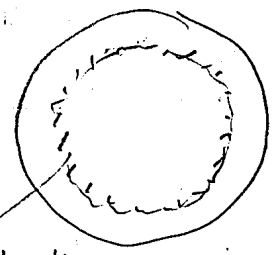
Free
Stuck IIII

Ok
Bands both sides IIII |
Bands one side.

Bad —

Phenomenon Even distributed spots
show them both sides
Bad row at edge of red team II 5.
Didnt fill - Red II

Varnish must have ridges
to get such bad results.



Red broke just beyond 8½" plate
Bottom OK

36 —

8½ disc of steel placed on Top transfer plate only —

3 Contact
4 High 800 lbs

OK

free slick HHH

Bottom OK where 8½ plate, red circle HHH
Bottom on one show bad side ring of breaks — other side bad ring HH

Side where 8½ disc is Contact only side that shock to plate,

No Red Circles —

37

Use 722 plates Reg
Except 1/4% ZnCl—
3 Contact
4 High 600 lbs

Free [illegible] 111
Quick 1

Ridge of Greatest birds bathander HH

One side of bird other 1

awful rung breaks at Edge

38

742 B plates 1
Reg-gal var 189 grames Phosphorus pp
3 Contact
4 Hugh 808

Fresl
Stuck 1

[redacted]

Varnish Not Black

NG

Bindo Gathering

NG Experiment
to only to get
Vencar Black & it
isn't

39—

6 50 folates 2 para 4 phthalimide
Reg 6/4 Reg V.

3 Contact
7 Hugh 800

Free IIII
Slink II

OK 1
Burds one side 1
Burds both sides IIII

Bad Ring red Burds 2 age II

Print—

OK – II

Cracked starting w/label going to Mass I
Red centers III not filled in Mass II not Label III

All filled

The surfaces are poor at Edges
& very good at Center
Colors red & not filled.

40

Req plates, Use Gour scraper Blanks—

7 min Contact—
then run up to 800 lbs
the moment needle shows 800 lbs
go back to contact & Cool.

OK IIII

Free III
click – I

Cracked in Red Center one side I

Large Red Centers in all—

Cracked Centers bad,

Great amount of gas or
Vapor undulated the
red Cent

Print

OK 11

Red Spotting on smooth Edge 1
Red unfil bath wider in mid. 11

Red seen in Center
~~Red sp~~

Edges well filled no Cracks

Printed - 2 Heat
2 Comical
4 Rough -

Still Red, surface
fair some RO -

No - 41

Reg plates - Bowed Scraper blanks

7 minutes Contact. Then
run up to 1000 lbs the
moment needle shows
1000 lbs go back to
Contact and coal -

Free 111

OK 111

Red Center,
Cooked not so bad as 40 a.
Considerable improvement but still a/
Yellow edges - Cracked

42

33 Dally 5m plates. Board Planks if possible —

10 Min on 500 lbs —

Free 11

OK 11 -

Squared normal, but some is oriented yellow & part transparent Thick Veneer Green strained & OE a RO -

This schedule may be good for Reg transfers, on new Planks for 44 45 46 Beat Dallys is bad, I has very Good sharp resonant,

Print, Wash Benzol before Print
2 heat
2 Contact
7 1000 Cool

OK 11 - Dallys RO + not good one reg transfer good and no RO —

X0043

2 plates of 33 on one new Chuck

1 plate of 33 on one side Regular on other

7 minutes at 500 lbs

Coop

This is pretty good

Think perhaps
Too is best.

44

Reg plates, Neo blanks —

10 Minutes on 600 lbs Coal

OK IIII

Free IIII
Stuck II

Red spot both sides bad blank II
Luckfull both side same — II
No Red II

Print,
OK II

RO weak only 3 or 4
have any

If blank were good
all turned to OK —

Red center —
Crooked Edge II
Not filled both side Edge II

Not near as good
as 44—
Which pretty good

45

Reg plates new blanks

10 min on 700 LG

Trace HHI
Shrink -1

OK-HHI

Pretty good transfer—

Trace red II
Black unfil I

Print—
OK II
Not filled ⟶ III
Black Centers II
Not filled next Label I

Considerably
RO—not extra smooth
No

If blanks were good all would be OK

800 is too much
5 6 or 700 lbs best

46

Reg plates Mod 6 Camb
10 mm on 800 lbs

Free IIII
Shiek - II

OK IIII

Birds - 1
Bad sinker deformation 1
Bird both sides 1

Red Cinder both sides 1

Fragments out much. some crushed yellow 1

No Print

47

Reg plates Neo blanks -

10 min 800 Lbs -

drop back to 500 Lbs
& Cool.

OK 11

Jims 11
Stuch - 1

Bird - 1 one side
Small " - 1 one side
" - 1 one side
" " 1 one side

48

6 Transfers — 6 Reg plates
new blankets —

10 Minutes at 400 lbs
Cool

Print 2 heat, 2 Contact 3 at 1000 Cool

OK IIII

Free Sticks IIII

No Bends

Red Centers, not quite fix IIII
both sides Cooked III

400 lbs is not enough
to fill + prevent Cooking
+ Weld

Wants 500 to 600 lbs

Prints - OK IIII
Cracked 1

83%

Red Centers faint II
" Strong 1

Cracked both sides near Label 1
Slight Crack in margin
Edges look good

Evidently Matte plates prevents
birds to a great Extent.

Moore is picking out
500 Matte plates to
flow & we will see
these in these Experiments
as soon as we get them

because 10 min at 500
has twice been free of
birds - but this lot
has birds & the plates
were Exceptionally bright

Prints, OK IIII
5 =

One transfer was
discarded

both sides Red faint Center 1
Long Crack at Center & Crop at Margin 1

49 -

12 Transfers Reg plates
new blanks -

10 Min at 500 lbs
Cool

Print 2 heat 2 contact 3 at 1000 lbs

Free IIII 1
Stuck

OK II
Bind one side II
Raw red birds Edge bad 1
Cooked both sides - 1

The plates are very bright polish
that have birds and the matte
plates no birds - We are up
against Synthanius, We

4 Mattes OK
1 Bright OK

1 Moderate Matte Bad
3 Matte Bad
3 Pebble Bad

4 Bright 1 good 3 bad 25% good
7 Mod Matte-Matte, 4 good 57% good

50

12 Transfers - Reg plates new Blanks.

10 minutes at 600 lbs
Cool.

Print 2 heat 2 Contact, 3 at 1000 lb.

Free 1111
Stuck Easy
Slick -

1 Bright plate no red OK } OK
2 Matte " " OK }

1 - Matte - slight red OK
2 Mod Bright " - Bird

1 mod matte " Bird
2 Matte " Bird

1 Matte " OK } OK
2 moderate Matte " OK }
1 Pebble - " 2 Birds -
2 Matte " Bad run red draw

1 Matte Red 1 time bird -
2 Bright " 4 Birds big -

92%

1 = Med Matte } OK
2 Matte —

1 Med matte } OK — slightly red cast.
2 Highlight cracks

1 Matte. } OK RO
2 Med Matte

1 Med Matte } OK — Very Red Cooked
2 Matte

1 Matte. } OK — Red 1" × ¼ on Margin
2 "

1 Bright } OK
2 Bright

1 Matte } OK
2 Bright.

1 Matte } OK.
2 " — faint red

1 Matte } OK. — "
2 Bright

1 Bright } Bird — Red Light
2 Bright } OK } Comet

1 Med Matte } OK — Image red
2 Palish —

1 Matte — } Bird
2 " } OK not filled cell area NG

Last record with Green Clear Edge 3" long 1¼ wide that a weld Here to count probably

Prints
OK IIII IIII 75%
not filled II
Cooked I

92% { 83% & 1 Comet

51 51

12 Transfers Reg plates new blanks —

15 minutes at 500 lbs Cool

632 V 1564-

Print 2 heat 2 contact 3 at 1000 lbs

12 Transfers — Free IIII IIII II Streak

Print			end	
1 good	Bird RO	RO	no RO	
2 good	none	none	none	
1 good	none	faint	none	
2 "	"	faint	none	
1 good	no	no	no	
2 good	RO	RO	no —	moved with rake
1 good	Bird RO	no	no	
2 good	" RO	RO	no	
1 good	RO	no	no	5
2 faint og	Bird RO	RO	no	
1 good	Bird RO	RO	no	
2 Good	"	RO	no	Cooled Red Edge 3" long 1¼ wide
1 V good	no	no	no	
2 good	faint	faint	no	
1 good	RO	no	no	
2 good	no	no		

1 Matte } OK 83%
2 " }

1 Med Bright } OK
2 " }

1 Matte. } OK fumed red
2 " }

1 Bright } OK
2 High Polish } Birds 2 } Comed

1 Matte } OK fumed red
2 Matte }

1 Bright } OK Beg red
2 " }

1 Bright } OK
2 Matte } Bird Bad shallow

1 Bright } OK 1" at hole Red
2 " }

1 Matte } OK
2 Bright }

1 Polish } OK
2 Bright. } 3 birds – The one we put fingers in cracks

1 Med Bright
2 Bright – 3 birds } 0 – } Comed.

1 Matte OK } OK
2 Matte – Bird } — NG

Not as good as 51 –
Walls lower pressure
longer heat,

52

12 Transfers Reg plates Neco Blanks

10 min 600 Lbs – Coal.
Drop of 50 – Lot 1565 Vac 632

All very free — Free HH HH II
Slack

Frzz IIII/IIII

1 = Med Mat 2 Med "	} OK:	slite Red. Stuck. None
1 Mat 2 Mat	} OK	Cooked both side Center
1 Med Mat 2 Mat	} OK	1½" black mat filled
1 Mat 2 Mat	} OK	Cook'd Bad blue Red Center, red margin not filled.
1 Mat 2 Bright	} OK	
1 Med Mat 2 " "	} OK.	Cook'd Center Both sides
1 - Mat 2 Bright	} OK	1 side 1½ x 2 mat quite full
1 Bright patch 2 " "	} OK.	½" black mat fill
1 Med Mat 2 Bright	} OK	1½ x 1 black mat fill
1 Bright 2 "	} OK	Slight red Center
1 Mat 2 Mat	} OK	
1 Mat 2 Mat	} OK.	

100%

53
Prints RQ deducted
42% good
#54
74% good
#55
80% good

53 Dup 51

6322-1565

12 Trans - Req plates, neg blanks -

15 min 500 lbs — Coop —

Print 2 Heat 2 Contact 3 at 1000

	Start	mid	End	
1 good 2 good	no Bad	no RO	no no	
1 good 2 good	Bad Bad	no Bad	no none	
1 V good 2 good	RO Bad	no Bad	no no	67
1 good 2 good	faint RO	RO RO	no no	
1 V good 2 good	no faint	no faint	no none	Cooked
1 good 2 good	faint no	faint no	no no	} good full both sides
1 V good 2 good	VVVf no	VVVf faint	no no	in
1 good 2 "	RO Bad	RO Bad	no no	not filled Edge not filled "
1 good 2 good	no RO	no RO	no no	not good weld outside -
1 good 2 good	RO RO	faint faint	no no	mat fill
1 good 2 V good	RO faint	RO faint	no no	6½ Red to Edge
1 faint 2 good	RO RO.	RO faint	no no	
Not filled III OK IIII III Cooked Center 1		66% — prints OK —		
	5 no	6 no	24	

1 - Mat
2 Bright } OK black 92% Freq. All Not one stuck

1 Mat
2 Med Mat } OK Slite Red Center

1 Mat
2 Splitely Mat } OK Bird } NG  Red ring

1 Bright
2 Mat } OK.  Red ring

1 Mat
2 Mat } OK  Red ring

1 Mat
2 Bright } OK  Red ring

1 Mat
2 Mat } OK Black ring

1 Med Mat
2 " } OK Cooked ring red

1 Med Mat
2 Bright } OK Red ring -

1 Mat
2 Mat } OK ½ red ring

1 Mat
2 Mat } OK Red ring

1 Mat
2 Bright } OK faint Red ring

Print 11 - one saved to correct ring

54 =

12 Transfers - Use Bowed Scraper Blanks - Reg plates

15 min at 500 lb - Cool

Print 2 heat 2 Contact 3 at 1000 lb

1 quad	no	no	no	
2 "	VV	VV	no	
1 quad	Ro	faint	no	67
2 "	faint	Ro	no	
1 quad	faint	Ro	no	Cooked
2 "	no	faint	no	
1 quad	Ro	Ro	no	Not fill -
2 "	Ro	no	no	
1 quad	no	no	no	
2 "	no	no	no	
1 "	faint	faint	no	
2 "	no	faint	no	
1 V quad	no	no	no	
2 quad	faint	VV	no	
1 quad	VV	VV	no	
2 "	VVV	VVV	no	
1 "	no	VV	no	
2 "	Ro	Ro	no	
1 "	no	VV	no	
2 "	VV	no	no	
1 "	Ro	VV	no	
2 "	no	no	no	

Print

OK IIII

Edge Not filled II

Not filled Center IIII

9 no 5 40% 22

1 Mat 2 Mat	OK	Free — slight red — Stuck 11
1 Mat 2 Mat	OK	
1 Mat 2 Mat	OK	slight red ring
1 Mat 2 Bright	OK	faint red
1 Bright 2 Mat	OK	
1 Mat 2 Mat	OK	slight red
1 Med mat 2 "	OK	slightly red
1 Mat 2 Med mat	OK	slightly red
1 Mat 2 Bright	OK	
1 Mat 2 Bright	OK	
1 Bright 2 Mat	OK	slight red
1 Mat 2 Mat	OK	Red one side

100%

Note Prints Lookes Clean 51 54 but less RO —

Moore for present this is our Transfer & Printing Schedule

55

12 Transfers — Reg plates
~~Dies~~ New blanks

15 minutes at 500 lbs — Coat
Dont fall any Below 500 or go more than 20 lbs above 500 —

Print 2 heat
3 Contact.
5 min 1000 —

Note 5 min instead of usual 3.

1 four. 2 "	no Bad	no Bad	no four	1 quad 2 "	no V	RO V	no no cg
1 four 2 four	RO no	RO no	four no cg	1 four 2 quad	no VV	no V	no no
2 quad 2 quad	no no	VV no	no no	1 quad 2 quad	no R	no RO	no no
1 quad 2 "	four no	no four	no no	1 quad 2 "	no no	VV no	no no
1 no 2 "	no no	no no	no no	1 quad 2 band	Bad no	no no	no no
1 " 2 "	VV VV	no V	no no				
1 quad 2 "	no RO	no no	no no				

Print.

OK 14 no | 13 no | 21 no

100%

Transfers
OK IIII IIII

free III
Hand stuck IIII
Emy stuck II

piece pulled off edge III 75%

Reheard in Chem room
Surface twice as good
as heard in Emmer place
with his spike welded on
20% louder & his machine
was running at unknown
high speed +

Records start Cutting
His morning 15 hours
after 1st heat =

56

Use regular plates and
Our old 213 Blank
16 Minutes at 500 lbs Coal

Print req schedule —

	Run	Mid	End
1 Loud	no	no	no
2 Loud	RO bad	RO	faint
1 Loud	RO	faint	no
2 Loud	RO Bad	"	no
1 Loud	no	RO	no
2 Loud	RO	RO	no
1 Loud	RO	RO	no
2 Loud	RO	RO	no
1 Very Loud	Bad	Bad	faint -
2 fair	faint	faint	no
1 Loud	Bad	Bad	faint
2 Loud	faint	RO	no
1 fair	RO	RO	faint
2 Loud	Bad	Bad	"
1 fair	faint	faint	no
2 fair to good	"	"	no
1 Loud	Bad	RO	no
2 good	faint	faint	
1			
2	2 no.	0	12 no
1			
2			
1			
2			

Evidently time will not
Cure too high a pressure

1 – } Comel filled Edges red Centers
2 – }

½ } ng Edges full not filled red. Cooked

½ } ng Cooked Centers Edges filled OK

½ Center ok Margin not filled. Bottom

½ Comel – Center OK Margin not filled

½ – OK – Center red ok Margin filled

½ ng – Cooked Center ¾ Margin not filled

½ ng Not filled Center Margin OK

½ ng Cooked Center, Rim filled

½ OK

½ Cooked C Margin not quite filled

1-2 " " "

57

Use reg plates + Machine blanks

20 min at 400 lbs — Cool

Dont let it go below 400 lbs
or above 410 lbs –

Print 2 heat
2 comel
3 High 1000 lbs –

1 } OK Transfers Red
2 }

½ } OK Count Red Cooked Centers.

OK " " "

OK " " "

OK " " "

OK Red centers –
½ cooked center

ng – Round Red 3/4" cracked

OK Cooked

OK Cooked Centers

OK Red Centers

OK Dark Red Centers

OK Dark Red Spat.

91 1/2 %

No 22 Scraper

Don't get rid of Red Rump —

1	quad	RO	faint	no	
2	quad	faint	"	no	
1	good	RO	no	no	
2	good	no	no	no	no 4 bad cut
1	fair to g	RO not fi	faint	no	
2	good	V	V	no	
1	good	no	no	no	
2	fair	RO	no	no	rings
1	good	RO	RO	no	
2	good	no	no	no	
1	f to good	RO	faint	no	
2	good	faint	faint	no	
1	Good	RO	RO	no	
2	Good	Bad	RO	no	
1	fair	RO	V	no	
2	fair	Bad	RO	faint	
1	f to good	RO	faint	no	
2	V good	faint	faint	VVVV	67
1	good	faint	faint	no	47
2	good	RO	"	no	
1	good	Bad RO	faint	VVVV	
2	fair	Bad "	"	no	
1	fair	RO	RO	no	
2	to good	Bad	faint	no	

3 no 5 21

58

Nos 70 cc plates 632 New Blanks

15 minutes at 500 lbs - Cool.

Print 2 heat 2 Contact 5 min 1000 lbs

1/2	OK.	Black lack fill Gath
1/2	OK	
1/2	OK	Black - lack fill -
1/2	OK	
1/2	OK Bright - Bands 2	
1/2	OK matte Band 1 red	
1/2	OK	
1/2	OK	
1/2	OK	faint red lack fill
1/2	OK	
1/2	OK	
1/2	OK	faint red lack fill

81 %

Free III
Stuck III

1	sharp-good	RO	RO	no	
2	Loud-	Bad	Bad	RO	67
1	faint	RO	Bad	no	
2	faint	faint	faint	no	
1	Loud-	Bad	Bad	RO	
2	faint to good	RO	faint	no	
1	faint	Bad	faint	no	
2	faint	RO	RO	no	
1	Loud	V	V	no	
2	good	VV	VV	no	
1	faint	V	faint	no	
2	faint	RO	RO	faint	
1	Loud	RO	RO	VV	
2	Loud	Bad	Bad	VV	
1	Loud	+	faint	no	
2	+ to good	RO	"	no	
1	Loud	V	V	no	
2	+ to good	RO	no	no	
1	faint to	RO	Faint	no	
2	Loud	RO	"	no	
1	Loud	RO	RO	no	
2	V. good	no	no	no	67
1	good	no	no	no	
2	faint to g	V	V	no	

2 3 19

59-

Use plates baked 260 degrees New Blanks

15 Min at 500 lbs - Cool
dont fall below 500 or above
510-

Print 2 heat 2 Contact 5 10000 lbs
big yellow Cracked 3/16 apart

1 OK -
2 OK — Not filled - red Cracks
3 OK
4 OK
5 OK
6 OK — faint red not quite fill
7 OK
8 NG — Cooked
9 NG — Cooked
10 NG — Cooked
11 OK
12 OK — faint red

45%

Free 111 111
Slick 11

A Crunch due to hammer
the mechanic dont do it

1	good	faint	faint	no	
2	good	"	"	no	67
1	good	V	V	no	
2	good	V	V	no	
1	good	V	V	no	
2	good	V	V	no	
1	good	VV	VV	none	
2	good	Crunch	Hammer Crunch	no	
1	good	VV	VV	V	
2	good	VV	VV	no	
1	good	No	VV	no	
2	faint good	RO	RO	no	
1	good	RO	RO	no	
2	faint good	RO	faint	faint	
1	good	V	V	no	
2	V good	RO crunch	V	no	67
1	good	no	no	no	
2	faint good	RO sharp	faint	no	
1	good	VV	no	no	
2	good *	no	RO	no	
1	good	faint	faint	no	
2	good	RO	RO	no	
1	good	Bad	RO	faint	
2	good	faint	no	no	

3 no 3 2

Middle - RO Caused by red + black same line

The surface are 1/2 the Loudness of 56 old regulars but not velvet Except end of Record a Wealth Getter blank surface —

60

Use plates baked 210 deg New Batch 15 min 500 lbs — Cool dont fall below 500 lbs or go above 510 —

Print 2 heat 2 Contact 5 1000 lbs

1 = OK		Red Center
2 Comal		Cooked
3 OK		
4 OK		
5 OK		
6 OK		The 5 Contains
7 OK		Slightly Cooked
8 Comal		" Cooked
9 OK slimy - Bad NG		faint red
10 OK		"
11 OK		"
12 OK -		

92%

Free IIII
Stuck IIII III

61

Use plates baked at 200 deg—
New blanks

15 Mm 500 lbs—Coal—
Dont go above 510

Print 2 2 + 5 at 10000 lbs

1/2 OK 1/2 bright } Comal	
1/2 NG	Cooked Center
1-2 —Comal—	Almost cooked center
1-2 NG	Cooked Center—
1-2 OK	Square out 1/4 yellow
1-2 OK	
1-2 OK	1 6 Flake Leakfill
1/2 OK 1/2 bright 2 6 mm NG	—
1/2 Comal—	Cooked Center
OK	Red Center
OK Comal—	Cooked
OK —	Red Leakfree—

75 OK + Comal

Free Hill Hill
Standard
Sheet

2 =

1	Loud	RO	no	no	
2	quad	no	no	no	
1	fair	Bad	Bad	no	
2	quad	Bad	Bad	no	67
1	Loud	RO	no	no	
2	quad	No	faint	no	67
1	quad	RO	RO	no	
2	Loud -	Bad	Bad	no	
1	Loud	Bad	Bad	no	
2	fair -	Bad	Bad	faint	
1	quad	V	V	VV	
2	fair to quad	Bad	RO	V	
1	fair	Bad	RO	no	
2	Loud	Bad	Bad	V	
1	fair	RO	RO	V	
2	quad	V	faint	no	
1	fair	Bad	no	no	
2	fair	faint	RO	no	
1	Loud	faint	no	no	
2	quad	11	no	no	67

Loud 6
fair 6
fair to quad 1
quad 7

Bad 8
faint 3
V 2
none 2

General satisfaction rather
Loud + RO rather bad —

With quad need blanks
" this process can be made
successful —

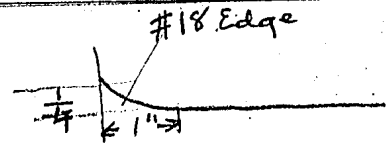
62

Grant 12 Records with
the Loose veneer —

3 heat
2 Contact
7 members at 1000 —

Rehearing in Chem reagent

1	quad	Fair	Faint	Faint
2	fair	RO	RO	
1	fair to quad	RO	no	
2	quad	RO	faint	
1	quad	RO	RO	
2	quad	RO	faint -	
1	fine	no	no	new reader
2	fine	V	V	
1	quad	no	no	
2	fine	no	no	67
1	quad	no	no	
2	fine -	V	no	



rather Loud surface on Emmy Wear due to its running record 100 Rev & a 20% Lowered response

Tested on Emmy speaker at first has replay 20% Louder Chan in Chan room spkrs —

& tested in Chan room again —

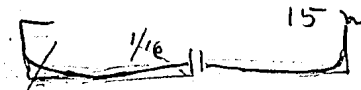
1	good	No Runouts on any adj. record, —
2	fine	
1	fine	
2	fine	
1	good	
2	good	

just as good as Chan. Stanhope Double Tracker model —

23 D Draper 55 Schedule —

632 1565 —

15 m at 400 lbs. coal.



Free III
Stuck III

1	OK	front Red Center
2	OK	" Red Center
3	OK	" "
4	NG.	Cooked too much.
5	OK	Red rim
6	OK	Light red Center
7	OK. 92d/p	"

Front — 2 heat 2 Control 5 lbs 6

1	fair	no	no	no
2	good	no	no	no
1	good	RO	faint	no
2	good	no	no	no
1	good	V	no	no
2	good	faint	V	no

Fair for RO, + surfaces —

Skraper not changed shape —

55 Schedule

18 Scraper (1/16 lowered as moved)

Transfers not Expected

Took 25 men To pack it —

~~Front~~ Transfer

1 = filled on Margin — Paint red ender

2 " " "

3 " " "

Front	1	quad	V	V	no
	2	¼ to quad	RO	RO	no
	1	quad	V	V	no
	2	"	faint	V	no 67
	1	quad	VV	V	no
	2	quad	RQ	RO	VV

55 Schedule

Reg scraper cut

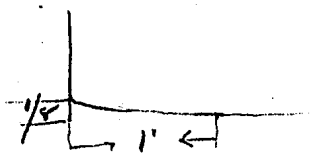
lowered 1/16 by lowering rotating draft — Stuck 1
" " 11

OK- slight rod + Even 5"
OK " " "
OK slate bend Comal " "

No improvement

63 —

Newscraper
NO 24 -



Yellow Edges →

1 OK - V from red
2 OK V "
3 1 Row red bands at Edge NG.
24 bands on other side.

Free 11
Stuck 1

Print -

Print, Inspection

1. OK
2 OK slight red cast
3 OK
4 OK
5 NG Red spot mark not fill
6 OK
7 OK
8 NG slight red Cracked in red at label
9. OK

3 were Cooked & thrown out

Surface 1 good 2 good	RO V	faint V	no
1 fine 2 fine -	backfill "	none none	
1 fine 2 good	V RO	VVVV faint	
1 fine 2 fine	faint no	faint no	
1 very fine 2 good	no no	no no	434 cold dope
1 good 2 fine	RO faint	no no	
1 fine - 2 good	V RO	V no	
1 good 2 good	faint Bad	VVV RO	
1 good 2 good	Rd faint	faint VV	

Deep set

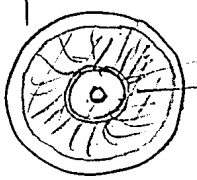
Surface very soft like Collodion or a double transfer —

Believe air cushion non suction will do — want thicker oil as it cushioned in place.

Expt 64

55 Schedule

Dry Experiment put sesame on smooth inside to have no name but none on label



on veneer on wood only around Label on smooth part of Rim —

Then playing on Music will have no contact with Blanket — an air cushion —

1. Doubtful Cooked both sides
2 OK Red on 1/2 Dark on music label
3 OK both sides faint on music
4 OK Red faint on music
5 Cracked 1 side other side 3X3 mm edge Red
6 OK faint red on music
7 Cooked other side big left
8 OK Red on music —
9 OK Red on music no red label
10 OK white red on music
11 Cooked Cracked
12 OK Red ink on music

12 new blacks - Rubbed hard on both faces by dump of graphite or Lead pencil — so all tools do appear being filled with graphite

55 Schedule transfer — print —

66

12 Transfers

Straight Scrapers on

Reg ~~for Machine~~

15 mm at 500 lbs

Print 2 head 2 Contact 5 1000 lbs

Last night we tested some 55 Schedule Transfers present — In Ernies room with his speaker All were Very loud + bad RO We were scared —

This morning brot Ernies speaker to Chem room — tested it against our reg here — found it 20% louder —

Also retested some 55 schedules found Surface a RO good most of them better than surface of our standard Double transfer record — Afterwards found trouble in Ernies unit which was probably running over 100 Rev — so RO + surface are good

Also found many record Cut Had died last night in Ernies room

4

Think Double transfer would be OK if cut blank was flat + edges clean

But Edges weld on 1st transfer + stuff Cant Cook out,

67

Take 6 55 Schedule transfers + put another transfer over them using 55 Schedule transfers + punch

Double Transfer —

1 — Cooked on 2nd Trans
2 Cooked Cracked on 2nd — Red both sides
3 Cracked on 2nd transfer — Red both sides
4 Cooked on 2nd " Red - Cracked both sides
5 — Cooked, both sides, Cracked 1 side Second Transfer
6 Wrinkles - NG
7 Cracked both side bigreed only on 2nd transfer
8 Cooked - both sides + only 2nd transfer
9 Cracked, Cooked both side bigreed only 2nd T
10 Cooked both sides, bigred only 2nd Transfer
11 Cracked " " " "
12 Cooked " " " "

This 55 Schedule doesnot make a double transfer on New blank Its a failure Most of red in Center

Print - Inspection.

1 OK
2 OK
3 OK
4 OK
5 OK
6 OK

1/2 quad four	RO Bad RO	found RO
1/2 quad four to quad	Bad RO Bad RO	RO RO
1/2 quad quad	no V	no VVVV
1/2 quad quad	Bad RO RO	RO RO
1/2 four to quad	found "	found "
1/2 quad	Horrible Bad	Bad RO RO

68

Transfer 6 machine blanks with Dallyo heat forward transfer plates

15 min 500 lbs - Coal

Print 2 heat 2 Control 5 1000 lbs

Transfer inspection.

1/2 OK — 1 1/4 from rim both sides Red

1/2 OK — 1 1/4 Outlined inside part other side

1/2 OK Except Crack — 3/4 Red 1 side red split

1/2 OK — slight red - quad

1/2 OK — Slight Red quad

1/2 OK — slight red

Millers Tracked blank hot + Cold last night on Ernies Spkr + over 100 Rev Wear sounded like a Godd yard + very bad run out due to over 100 apprx + not noticed at the time -

Next day a new print tested on Chem room showed pretty good surface + some RO

This pm printed on Reg Green Double Transfer shows very fine matt scorfade only V V V fault RO both sides —

The Master is Evidently OK as far as general surface is Concerned + Perfectly Satisfactory —

69 —

Use Miller Warm + cold blank in printing Use new blanks Transferred on 55 Schedule

15 min 500 LBs — Coal
Print 2 heat 2 contact 5 1000 Lbs

Double Transfer is slightly softer than 69 - + has less Run out but there is not a very great difference + If we had a good blank + got rid RO think the difference would be quite small —

Must get smooth surface + Even blanks to equal the Reg Dow Transfer —

Print =

Marked D for Cooked - doubtful -

Blanks made by special schedule
3 mm Coulter 7 mm 1000 lbs -
Used 18 Scraper

Transfer 55 Schedule
15 mm 500 lbs -
Dont fall any below 500 or 70
above 520 - 632 Van 1567

Free all -

Print 2 head 3 Coulter 5 1000 lbs
Transfers -

OK -	Big red Center
OK	" " "
~~Doubtful~~ -	~~Cooked~~ both sides
OK -	Big Red Center
~~Doubtful~~	Cooked Center
Cracked - no -	Coulter "
OK	Red Center
OK	"
OK — D is for doubtful	"
OK — marked the blanks	"
OK	"
OK	"

Extra time allowed on this
Case -

New Machine Blanks
55 Schedule T + Print

Weak musical records —
a test —

1 = Instrumental Kathleen Mavourneen
full of knocks + cracklies = general
surface ok — + should have new
one — Much improved after washing
not to the knocks —

2 Sweet spirit hear prayer - Linsted
start horrible noisy
Knocks all thru mfg 3 or 4
together - Lots knocks —
After washing start is very
much better which record
is better — + not so bad —
RO at start

Print inspection —

1 = OK very dark red
2 OK "
3 OK Black
4 OK "
5 OK "
6 OK
7 OK - Black -
8 OK - 1" cracked fired Label
9 - NG Cooked Label
10 OK
11 NG Cooked cracked Label
12 OK -

1 faint Good 2 good	no faint	no no	
1 V good 2 good	no no	no no	
1 good 2 good	no no	no VVV	
1 good 2 good	no faint	no no	434 67
1 V good 2 good	no no	no no	
1 good 2 V good	faint faint	no no	67 434
1 good 2 good	VVVV VVVV	no no	
1 good 2 good	faint no	no no	67 434
1 faint 2 faint	RO RO	RO RO	S 18 1 G
1 good 2 good	VV VVV	no V	
1 2 V to good	no RO	no faint	
1 good 2 good	RO VVV	no no	

72

Make doz new Blanks machine with 1/8 inch 180 mesh on bottom 1/8 on top —

Transfer 55 Dark Color
15 min 500 lbs — Coal

Print 2 Heat 2 Contact 5 — 1000 lbs

Transfer —

1 NG	Cooked Cracked	
2 OK	Very dark red	nearly all Coal
3 OK	" "	"
4 OK	" "	nearly all Black
5 OK	" "	"
6 OK	" "	"
7 OK	" "	"
8 OK	" "	"
9 OK	" "	"
10 NG	Cooked both sides Cracked	
11 OK	Very Dark red	"
12 NG	Cooked, Cracked -	

The finer powder helps fill Cavities

80%

doz blanks made in Machine
all the powder being screened
thru 180 mesh —

Transfer 15 mm 500 lbs —

Print 2 heat 2 Control 5 1000 lbs

74

Duplicate of 64 Expt —

Dally make tools to do quick + good job with Serani - But want little more on —

Transfers unpeeled —

1 Ok Cook - Red over cohale label + some
2 Ok Red on label read some more
3 NG Cooked cracked
4
5 No use —
6
7 Black 2 1/2 from Edge
8 inward
9
10 Dont do the Egg
11
12

N G

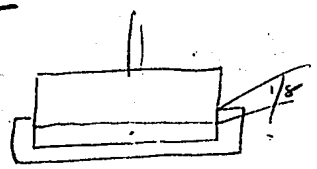
No print

Print — Inspection —

1 OK — Little useful on manuscript
2 OK — no red
3 OK — Black
4 OK — "
5 OK — "
6 OK — "
7 OK — Black
8 OK
9 OK — Very dark red
10 OK — Black
11 Cancel — Weak print

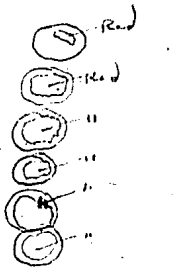
1 good 2 good	no faint	no faint	Weak Print
1 good 2 "	no RO	no RO	
1 good 2 good	faint "	faint no	
1 good 2 good	V VVV	no no	
1 good 2 good	faint RO	no V	
1 good 2 good	VV no	no no	
1 fine 2 fine —	no faint	no no	67 434 13
1 good 2 good	V VVVV	no no	
1 V good 2 good	VVVV RO	no RO	
1 good 2 good	no no	no no	
1 good 2 good	faint RO	V VVVV	

75

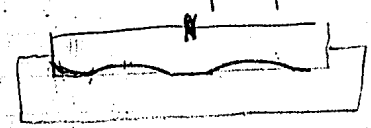


25 Scraper —
15 min
500 lbs Coop.
Print 2 heat 3 Contact 5" 1000 lbs —
Transfers. = They had a black Edge 3/8 to 1/2" wide

1 - OK
2 OK
3 OK
4 OK
5 OK
6 OK
7 OK
8 OK
9 OK
10 OK
11 OK Little Cooked Cancel
12 — Cooked up split.



Black Centers
2 1/2 to 3"



Probably Great Lakes —
See 76

Print will show of Edges filled —

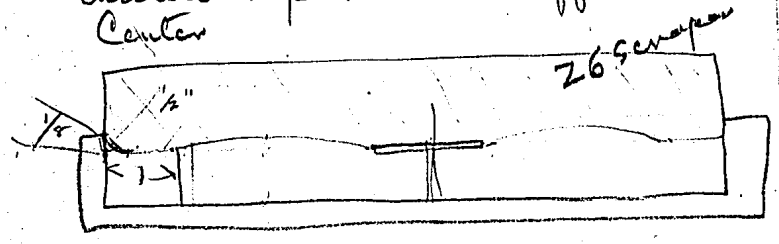
83%

Wavers - made as a preliminary test 3 records wanted as 76 - They are all ok & fine — more records —

1	faint good	VV	no	Red Center
2	good	V	no	
1	fine	no	no	67 -
2	good	faint	faint	
1	faint good	RO	faint	
2	good	VV	ni	
1	fine	no	no	
2	fine	no	Rio	
1	good	V.V	no	The spot not filled
2	good	VRO	V	Red over ends
1	good	faint	no	
2	good	no	RO	Less fill red spot
1	good	RO	no	
2	V fine	faint	faint	
1	good	no	no	
2	good	VVVV	VVVV	
1	good	no	no	
2	good	faint	VV	
1	good	no	no	
2	good	faint	V	
1	good	faint	VV	
2	fine	no	no	
1	good	V	no	
2	V good	no	no	

76

Reg plates, new blanks made with straight scraper, bowed inward to put more stuff in Center



15 Min 500 lbs - Coal

Print 2 heat 3 Contact 5 1000 lbs
Wavers 10 OK 2 Cracked Dark red very

Print inspection
1 OK Marginal filled - very dark red
2 OK " " " only a red spot
3 OK " " " larger spot
4 Doubtful. - unfilled after end wavers -
5 OK filled no red
6 OK filled no red
7 NG Cracked Center. — probably due telling scraper
8 OK filled - Red plastic
9 NG - round spot in wavers not filled
10 OK filled Smells very dark red Black
11 OK " Red Center over Label but print label OK
12 OK "

Note – WE washed the records in soapy water – then they had longer cut

77

Stripped Veneers printed directly on new blanks # (18) –
3 mm heart
2 Conceal
10 at 600 lbs –

1 good 2 good	faint "	no faint	
1 Cuts –	—	—	Cooked + stretched
1 good 2 good	✓ ✓	no no	new master m
1 V good 2 good	no faint	no no	Cuts little
1 good 2 good	no faint cut	no V	Cuts little
1 V good 2 good	no no	no no	

Moore says they buff transfers as stuff cooks out + caused Cuts – Can't do it with this – probably a solvent like muck off –

This Veneer process is Very promising + Certainly Can be made a success –

1 NG not filled 1" clear in mouth
2 NG Backfill near label
3 NG Cooked center
4 Cancel - red Label
5 OK
6 OK

No use going thru the 6a
NG,

To get flatter blank both
longer heat + pressure wanted
see run 79.

#78

12 New Blanks 18 Samples

3 Min Contact 5 Min at
2000 lbs

55 Schedule on Transfer

15 Min 500 lbs Coal
632 Van 1570

Print 2 Heat 3 Contact
5 Min 1000 lbs —

Transfer inspection

1 OK-	Still req red center	
2 OK	"	"
3 OK	"	" (slightly Cooked near Edge)
4 OK	"	"
5 OK	"	" almost a Cook
6 OK	"	"
7 OK	"	" Cooked
8 OK	"	"
9 OK	"	"
10 OK	"	" Cooked
11 Cracked mid	"	"
12 OK	"	"

Evidently no amount of high pressure will
Correct or make even 719 provides blanks.

Prints ~~inspection~~

1 good	no	no	Dressed for RO
2 good	Ro	vv	
1 good	V	VV	
2 good	faint	no	
1 good	no	no	Good 13
2 V good	no	no	Very good 2
1 fine	no	no	FINE 7
2 fine	no	no	Very FINE 3
1 good	no	no	No Run outs 13
2 Very fine	no	no	VVV faint 1
1 fine	VVV	no	V " 5
2 fine	no	no	faint 3
1 good	V	no	Run outs 2
2 V fine	no	VV	
1 good	no	no	
2 good	faint	faint	
1 good	Ro	Ro	Dressed for RO -
2 fine	no	no	
1 fine	no	no	
2 fine	faint	VV	
1 good	V	V	
2 good	V	V	
1 good	V	no	
2 V good	no	no	

83% good to shipping Dept for surface & RO's -

Thus is fine -

Note difference between 78 & 79 in pressure & time in making blanks

Correct (62" screening) Thus but had Extra fine powder

79 - BANNER S S

79 - fine powder — blanks made at 3 Men Contract

7 mills 1200 lbs - Machine loaded

18 scrapers -

Dressed 55 Schedule

1 OK	Dark	Red Center	
2 OK	"	"	
3 OK	"	"	
4 OK	"	"	
5 OK	"	"	
6 OK	"	"	100%
7 OK	Very "	"	
8 OK	Very "	"	
9 OK	Light	"	Allowed Cooled
10 OK	Dark	"	
11 OK	"	"	
12 OK	Dark Light	"	

Print inspection

8 OK
2 OK
3 NG not quite full edge
4 OK
5 OK
6 OK
7 OK
8 OK
9 OK
10 OK
11 OK
12 OK

Prints - 91.6%

Note To get it as good as this Varnish must be even flow + packing blanks good

Print Impression

1 OK Red on graftite, black on Edge Label
2 OK " "
3 OK " "
4 OK " "

1 good 2 good	no V	V VV	
1 fair 2 good	RO RO	RO RO	
1 good 2 Blurr	V V.V	red no	
1 good 2 V good	V VVVV	V VV	67 new mixture used

Surface not so good as old black + welded

4 Blanks 719 fine powder
3 Contact 5 min 1000 —
Use 2 cog plates — grafted both sides except Edge & Shade —
15 Ohm 500 lbs — Coal
Print 2 heat 2 Contact 5 1000 lbs

Transfers repeat.
1-2 OK (Red) Red about
1-2 OK cleaned on Edges, Label mostly used
1-2 OK " " used of Label
1-2 OK nearly what was wanted,

This shows if proper blank + proper rigging for grafting this process can be carried out Commercially Easily

409 Domestic wax has Run out
like 416 - not many small snaps
RO is rather loud -

411 Domestic wax same RO as
in 409 - + more snaps - ||||||| big knurls

412 Domestic wax RO v v v faint
full big depressions on steel + snaps
at intervals -

411 Dup print Big RO - snaps late -

409 Dup print ||||||| - Surface plain
copy no RO -

#81

6 Smooth moulds - 3 foreign
wax 3 Domestic wax
printed, on Double transfers
from Masters —

416 - foreign showed on old moulds,
a ground each revolution, faintly RO
least like small sharp snaps faint -

415 foreign - has a RO like a dull ground
Can just hear surface = full snaps

413 foreign, surface can hear louder than 415
has same RO, ground a little less
snaps + some smudgy - has plain volume
there are ||| together

413 Smaller print - Very Bad RO, practically
Blank - surface much louder

Cantell on left about a smooth blank.

82

6 Domestic + foreign wax
Locks 81 Cut principally on
Reg Schedules 419 Mach-
45/5 schedule — 418 scrapers

Domestic 411 - Same RO as 81
Velvet surfaces - less scrapes

No 2 print 411 - Same RO as in 81
Surfaces little rougher -

Domestic 409 RO as in 81 - surfaces faint
" 409 Dup RO less " " "

Domestic 412 - Very bad RO - ——
" 412 2nd print weak RO. Scrapes.

Foreign 413 - weak RO - surfaces weak Scrapes bad
413 2nd pt Bad RO " "
413 3rd pt Bad RO scrapes + rounds of joint

Foreign 415 RO Like no 81 surfaces faint
415 2nd weak RO surfaces only faint

Foreign 416 RO Sounds like Cutting " " "
416. 2nd RO " not so bad " "

Drip – but blank made on 3-4 tonby
1000 lbs instead of 1200 –
Bi press
1 = Discard Run red for accurate weights
2 Not filled to Margin
3 Doubtful not filled to rim in margin
although it may be OK –
4 not filled Edge
5 OK
6 OK
7 OK
8 OK
9 – NG Red rim –
10 OK. red edge
11 NG Red rim –

719 fine powder use 26 screen pan
Blanks 3 min Contact 4 min 1200 lbs
Cool

Transfer
use mag plates 15 min at 500 lbs Cool

Print
2 Heat 8 Contact 5 at 1000 lbs –

Print inspection –
1 Doubtful – red Edge. may have RD Rim
2 " Slight red on rim, may Ra
3 " not filled to Edge of margin
4 Discard – Red blotches near rim band
5 OK
6 Doubtful not quite full to Edge margin
Drip 7 not filled to Edge of margin
8 NG Bad fill, Red 6" long 1½ wide
9 not filled to Edge of margin
10 " "

Test for flatness of Records of 7/2 -

1 = almost flat OK.
2 OK perfect,
3 20/1000 high in Centre Letter G moved
4 " " Nos 2 & 14 moved
5 OK perfect,
6 OK perfect,
7 Dished 25/1000 - dish side down Is OK
8 OK — perfect,
9 OK - perfect
10 - nearly flat, Extreme edge Turned up on 1/2
11 — Red Cracked centre — Out —

Remarks — Nov 22 1913

Up to date the following process best + to obey fence

Phenol resin 4 Wood to 1 Resin — Resen 5:1 6/4 - Double grinding to give 50% passing thru 200 mesh

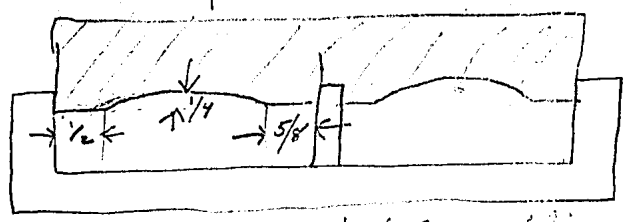
Machine, Jar loading —
Pressed 3 min Contact
7 min 1200 lbs —
Scraper flat with 2 concaves
Cooled 26 scrapes
Top plates put on by machine & blanks Extracted by hydraulic Extractor — Blanks Cooled 1/2 hours at 180 Fahr

Transfer Reg plates 45CC 632
Varnish 15 min 500 lbs Cool -

Printed 2 heat 3 Contact, 5 1000 lbs Cool —

84

New Scraper #10 28



9 heat 5 1000 lbs

Transfers—

1 OK
2 OK
3 OK
4 OK
5 OK
6 OK
7 OK
8 OK
9 ok
10 OK
11 - Doubtful
12 OK

no red
"
"
not filled. 4  dark red
not red
2 spots dark red 
not filled dark. 
not filled dark 
red not filled 
Red with circles 
Red not filled 

Dec 86 — 1/4 11 too narrow

85

Duplicate lot – 3 Count 7 at 1000 Lbs –

1 NG not filled 2 Edge 3" long 1/4 wide
2 NG "
3 NG "
4 NG "
5 NG " Very Good
6 NG "
7 NG "
8 NG "
9 OK
10 OK

Not tested Scraper

Wrong

27 Scraper 85

Req plates Machine Loaded 6 Counts
27 Scraper 55 Schedule 3-7-1000 Lbs
15 Men at 600 Lbs – Print 2 heat 3 Control
5 at 1000 Lbs –

Prints.

1 OK
2 OK
3 OK Reddish Cast 1 place not filled 2 edge nearly to middle
4 OK Reddish Cast
5 NG – Red 2 Edge not filled both Sides
6 OK
7 NG Red Cast – not filled to Edge of middle
8 OK
9 OK reddish Cast
10 OK
11 NG not filled Enough at 2 edges – reddish Cast

No test Scraper

Wrong

28 Scraper 86

Prints Inspection

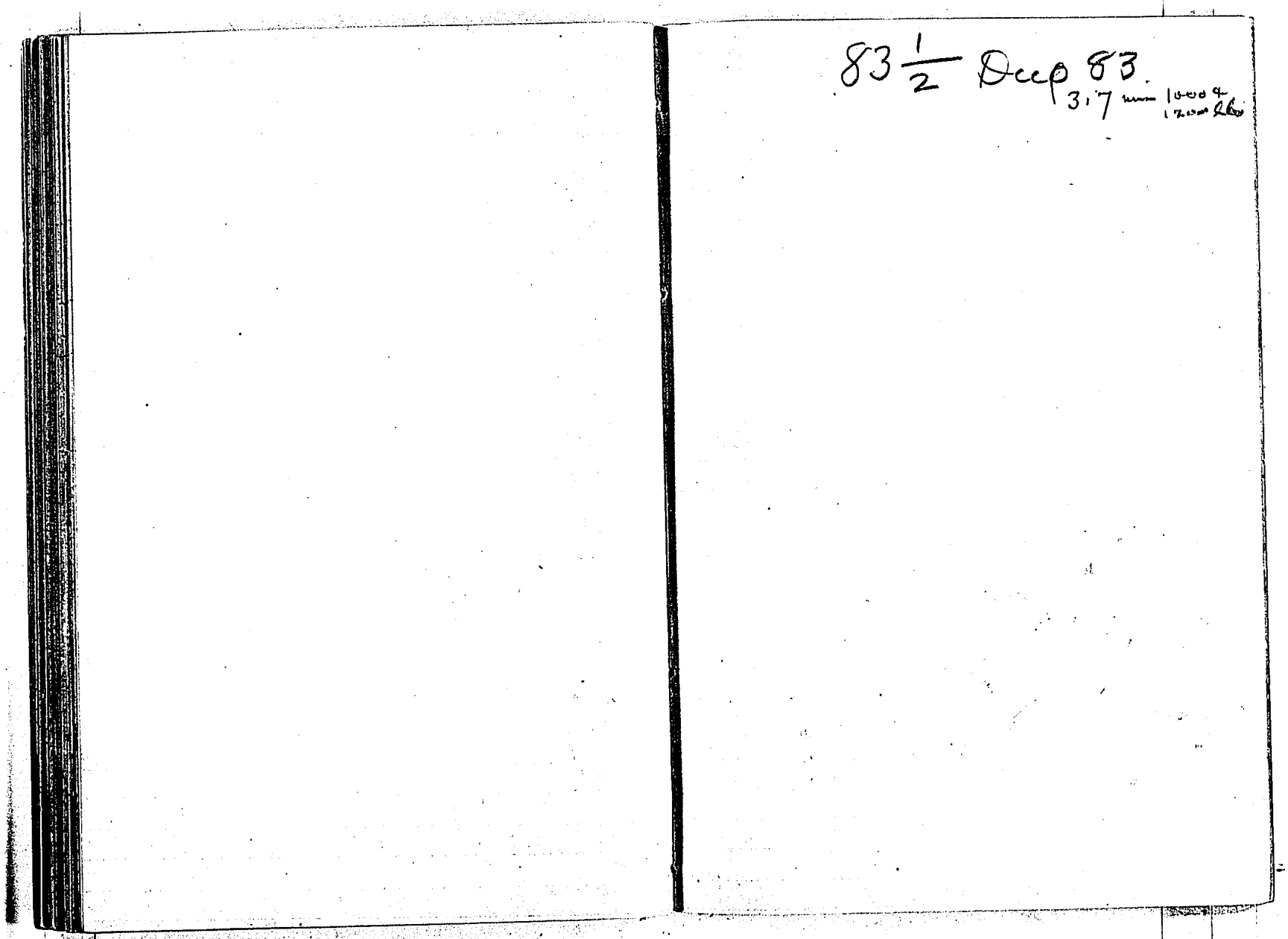
1 NG not filled in Music
2 NG " "
3 OK
4 NG " "
5 NG " " 5 OK
1 Cancel
6 OK 6 Discard
7 Cancel
8 OK
9 OK
10 NG " " "
11 OK
12 NG Doubtful. Edge not filled.

2nd Lot. - Duplicate

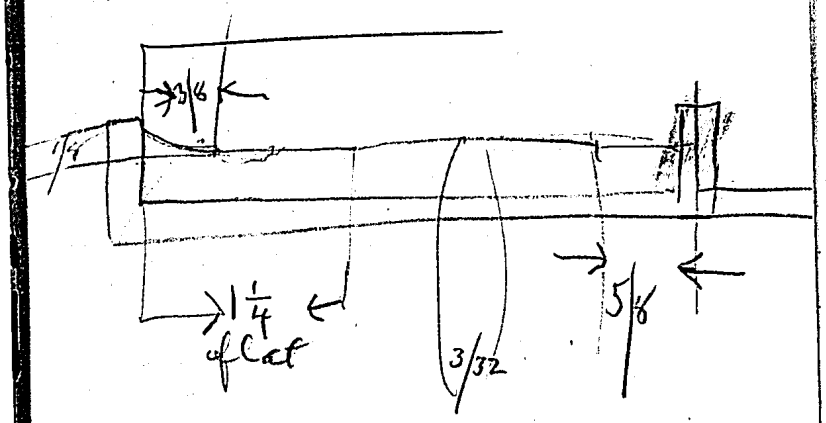
1 OK
2 NG not filled, Outer Edge of Music
3 OK
4 OK
5 OK
6 NG " " Very bad
7 OK
8 OK
9 Cancel Only filled 1/8 beyond Music
10 NG Too light in fill on Music
11 OK
7 OK
1 Cancel
3 Discards

Too much in Contact
Parts Cant fill Edges
& paint Music

76 Scraped
Full of fat
Too Concave
1/8 high in
Middle

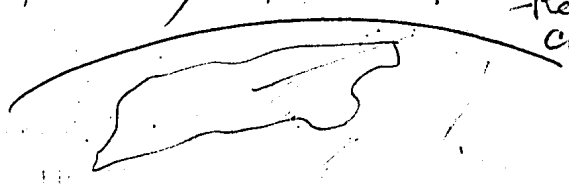

83 1/2 Dccp 83.
3,7 mm

No 30 Scraper



12 Transfers Red varied position, Spencerpal trouble

Red blew up cracked



#87

Dallys plates

45cc 632 Lot 1574
2½ baking. 240 Fahr

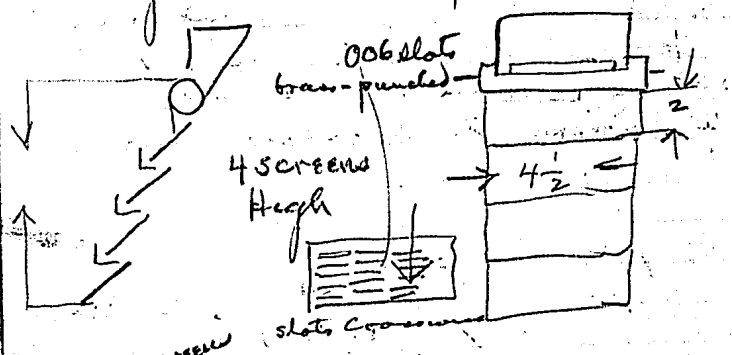
Put plates in warm Covered truck after flaming & cooled by blower the alcohol vapors out
Did it in one hour —
30 scraper 3.7 + 1200 lbs — 55 Shrinkage
3 hard releases — P.

1 OK black want fill
2 NG big piece split off — tears —
3 OK black unfil
4 NG 2 bends + Cracked at Edge
5 OK Red spots.
6 OK "

The fact that hard releases on this + tears + not welding good is due to too short baking —

No Print —

Dallyo slat screen Exports



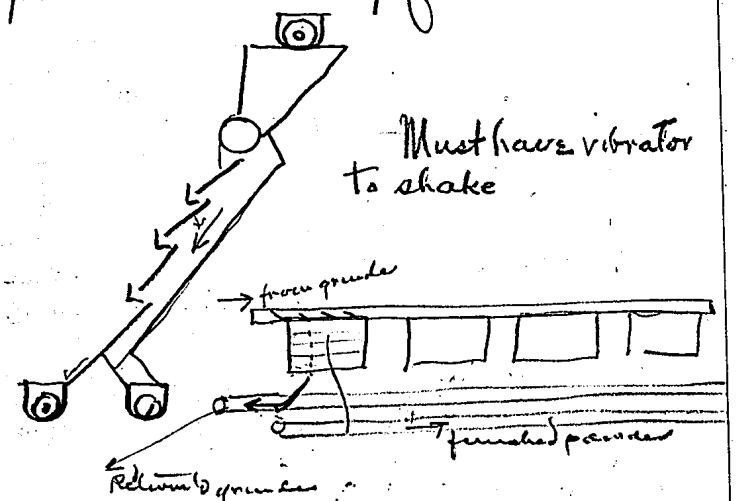
passes over screen 100 grams per minute.
of 700 Lbs in 20 hours over a screen
One foot wide = 4 passes - or using
16 screens a one pass

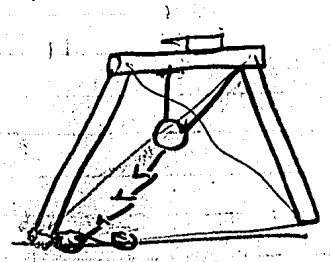
Tested 50 grms 719 records.
1st pass | 20.5 grms went thru 12½ grms of which passed 200 mesh screen
2nd pass 8.2 grms went thru 4.8 thru 200
3rd pass 3.3 " 1.6 "
4th pass 2.3 " 1.1 "

It is probable that only the stuff that went thru on 1st pass is what we want,

This gives 60 grms per pass per foot of width, per minute

60% must be regrounded =
480 lbs in 20 hours one foot wide,
for 12000 blanks requires 8000 lbs of powder - Return
4 screens Each 4 feet wide.





Dalby's final Expts Accuracy
powder —

Used the 4 way 2 X 4½ 120 mesh
woven screens set at angle of
75° deg

50 grams ~~—~~ of the 4.9 fine
~~grains~~ powder were then
used Run them on
47 seconds —

17.9 grams went thru.
of which 2.3 remained on 200 mesh

2nd Trial

17 grams thru
of which 1.8 on 200 mesh

Under Microscope is very fine
angle fibrous —

High viscosity seems to 62
Bad — or short runs
Can't say which

88

Dallys 61 — 3 hours run
Temp 240° 632 V annealy
Viscosity 12 mm 52 seconds
Viscosity taken after standing
45 hours
18 Scrapers Machine Loosening
55 Schedule
Transfers 4 Stencils 2 Frosts

1 = two fine pulls with burrs 1/32 Conical
2 Red not filled 3 big burrs 1 side.. Cracked, Cracked, NG
3 = Lime red burrs on Margins.
1 bend Center Missing 1/8 wide 1/8 long
4 NG — 1/3rd Red lifted & Cracked
Red. not welded
5 — Burrs Red lift up
Not welded
6 Cracked
NG

Prints inspection

1 OK
2 OK
3 Longrun med apart not filled No 11 Treecrafter
4 OK
5 Conical. Run not filled 1/16 To minus
6 OK Conical
7 OK – 8 OK – 9 OK, 10 OK
2 Treecrafters discarded. 75%

1 faint to good 2 good	faint VVV	Used after getting good sequence
1 good 2 faint to good	VVV RO	Used after getting good sequence
1 good 2 good	VV V	Used after getting good sequence
1 good 2 good	no RO faint	Used after getting good sequence
1 good 2 V good	VVVV VVVV	Used after getting good sequence
1 good 2 good	V V V V	Used after getting good sequence
1 good 2 good	not filled RO then VVV faint	Used after getting good sequence
1 good 2 V good	faint no	Used after getting good sequence
1 good 2 V good	no VVVV	Used after getting good sequence
1 fing 2 good	no VV	Used after getting good sequence

89

30 Scraper –
3-7-1200 lbs 719 finn
55 Schedule 632 1574

83.3%

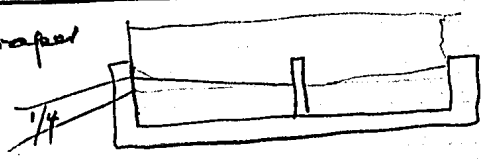
1 OK –
2 OK
3 Doublefed – Cook Center
4 OK slight red
5 OK " not filled
6 OK Dark red
7 OK slight red near edge
8 NG – Blister near rim Cracked
9 OK-Conical Red near rim
10 OK dark red near center
11 OK long red & blister at rim 3" Long
12 OK slight red

Print –
It is strange more than
1/2 of Records Cut –
It was rather Cold when
tested – 60° F all night

Experiment on Transfers

28 Scraper	100 run Hour	91 OK	91%
21 Scraper	213 "	186 OK	82.6
28 Scraper	156 "	135 OK	86.5
21 Scraper	472	436 OK	90.2
21 Scraper	283	260 OK	91.9
1=18 Scraper	100	80 "	
2 " "	100	86 "	83.25%
3 " "	100	85 "	
4 " "	100	82 "	

31 Scraper



31 Scraper #90

719 - 55 Schedule

Transfer 12 OK but 1 Cracked 4 dark red in Center

Prints inspection -

OK IIII IIII Several dark Red

Red Center, not filled good 1

Not filled out run after lunch 1 83.3%

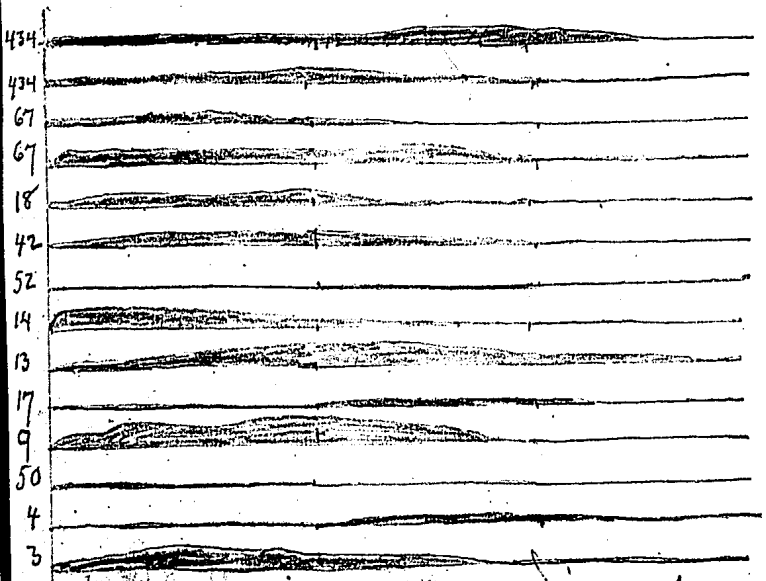
Blank recessed at Coulter
10/1000 on each side -
719 - 1 & Scrapper
5" -

1 OK	Coulter -	OK otherwise
2 OK	"	"
3 OK	"	"
4 OK	"	not filled from numeric out
5 OK	"	OK otherwise
6 OK	"	Red spot run, not filled in numeric
7 OK	"	Not quite filled marginal
8 OK	"	OK otherwise
9 OK	"	"
10 OK	"	"
Dup		
1 OK	"	"
2 OK	"	"
3 OK	"	not filled on 2 edges
4 OK	"	OK otherwise
5 OK	"	"
6 OK	"	not quite fill on marginal
7 OK	"	"
8 OK	"	OK otherwise
9 OK	"	"
10 OK	"	"
11 OK	"	

Would we have Geer wearing for tests Lately
(Tracks)

✓	434	old dope	very shallow grooves showing Wear	
✓	67	old dope M	Slight Marks, WM -	old dope
✓	18	old dope	Sub M from WM marks	
✓	42	old dope M	" "	New Dope
✓	52	old dope M -	" "	new dope
✓	14	old dope	" "	old dope
✓	13	old dope M -	" "	old dope
✓	17	old dope M	" "	old dope
✓	9	old dope M	" "	old dope
✓	50	old dope M	" "	New Dope
✓	4	old dope M	" "	Old dope
	3	old dope M	" "	old dope

Test for Run out only



Full height of line is a thousand

Test of Dunmaddies grafited tracked White Marker by Chantrell unbeg Cam Machine — twice over, Silk wheel Velvet pad, 4 minutes —
1122-150- G3
Celluloid print, just on limit of Edwards hearing for general surface, a good many small snaps which probably Comes from Celluloid —
Surfaces on Celluloid OK - Harsh right inside Cabinet Best 2 over Ireland bearing snaps — which there must be over 100 breakones

1122-151- No G2 — On celluloid at 1st Cant hear general surface horn right in funnel 1/3 across hear it very faintly right on my limit - Very few snaps in this Compared To G3 = but there are 3 big snaps or 5 other weak snaps

G3 in condensite 719 –
Has a blank RO. general surface Velvet and is good, to me its 4 times louder than Celluloid – to Dimwiddie Masters its very little louder Geeeeee they cannot gauge volume – less snaps than in Celluloid —
2nd G3 print weak Run Outs VV surface about same as 1st Velvet, in regular precision test would be marked V good.

3rd Print G3 Condensite Bad blanks RO – surface about same – bad snaps near start, RO all way across –

G2 Condensite –
VVV RO changing at def points – Surface perhaps not so good as G3 but duller, Surface would be rated Velvet & good — Same snaps as in Celluloid

2nd Print – V run outs 1/2 way then VVVV — surface about same as 1st print, Same Snaps as in Celluloid

3rd print, Snaps same — 1st 1/3 – VVV RO — surface good Velvet.

This looks as if the grafted White Master & plating with Copper ink bath – is OK —

Dec 5 1913

New blanks rec'd (Keen Comply)
694 tested 206 Discarded

79 for knocks
57 Cracked
34 Rec'd Ocks
25 Cracked
3 Poor pound
3 Scratched
2 Over Spots
1 Bad Label
1 Center Hole.

488 OK –
71%

Test for RO = No 1 OK for RO. but Limit
2 Can't hear RO –
3 – little Too much RO on start
4 No RO
5 Has RO. beat not loud enough to Reject
6 Limit for rush on start.
7 No RO
8 Limit for RO.
9 Little Too much RO –
10 Limit of RO
11 Bad RO
12 "

Recd rack

2586-A Serenade Moskowski
Festival Quartette -
On Celluloid — new,
Copper Dope Needles

only 2 or 3 small emeries —
surface is not dead Velvet

2565-A — Monte Cristo
Plated mold Dope

Shade more Velvet
than Moskowski — Not
much difference —

2589 C Vocal Trial
Simeon Monte Cristo
Mrs Graham
Old Dope

Old Loops appear more violent + more snappy

12 — 110 — 91.6
12 — 10 — 83.3
12 — 9 — 75.
12 — 8 — 66.6

12) 110 (91.6
108
2 0
1 2
8

12) 90 (7 5
8 4
6 0

12) 100 (8 3
9 6
4 0
3 6
4

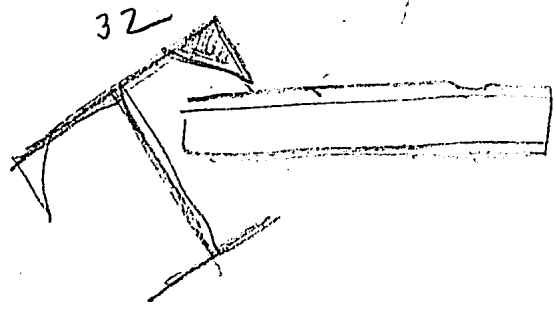
12) 80 (6 6
7 2
8 0
7 2
8

12) 1500 (1 2 5
1 2 0
3 0 0
3 0 0

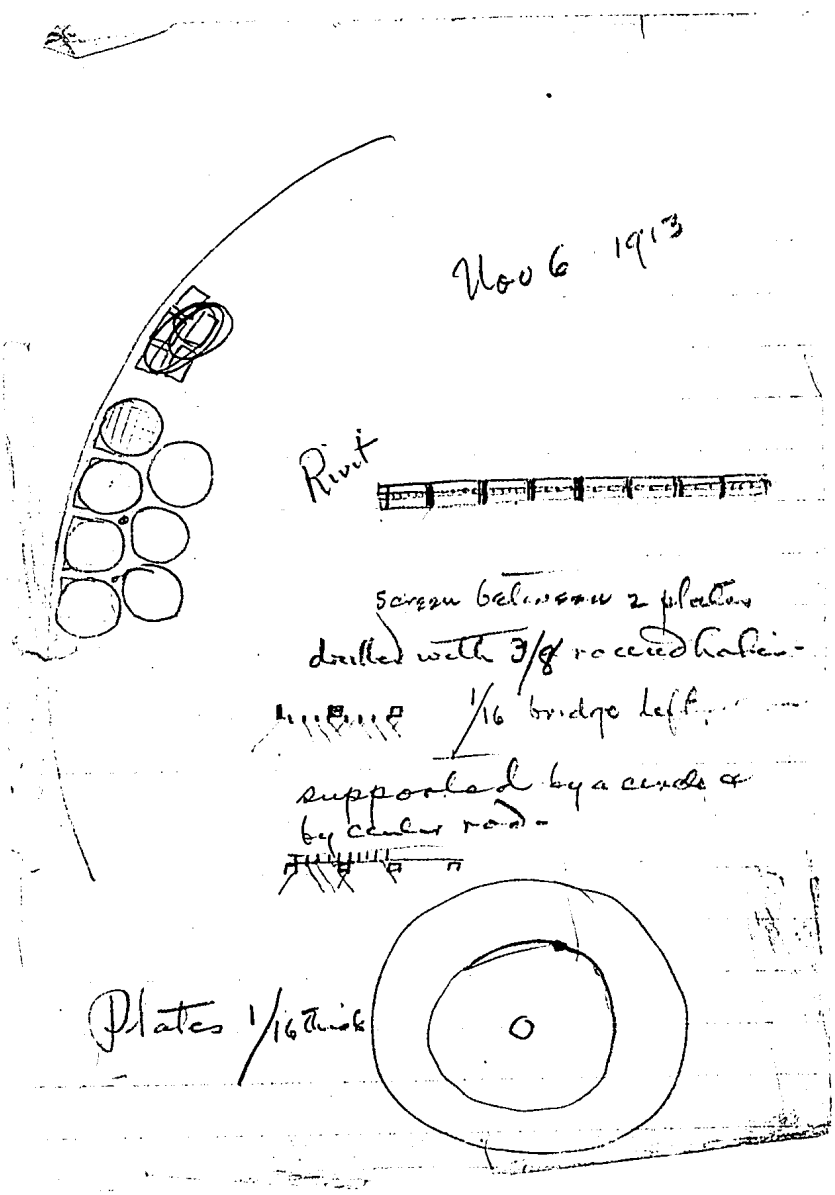
300 meters a week

3.
3. 2.5.
32

50) 1000 (20



[ITEMS(S) FOUND IN BOOK]



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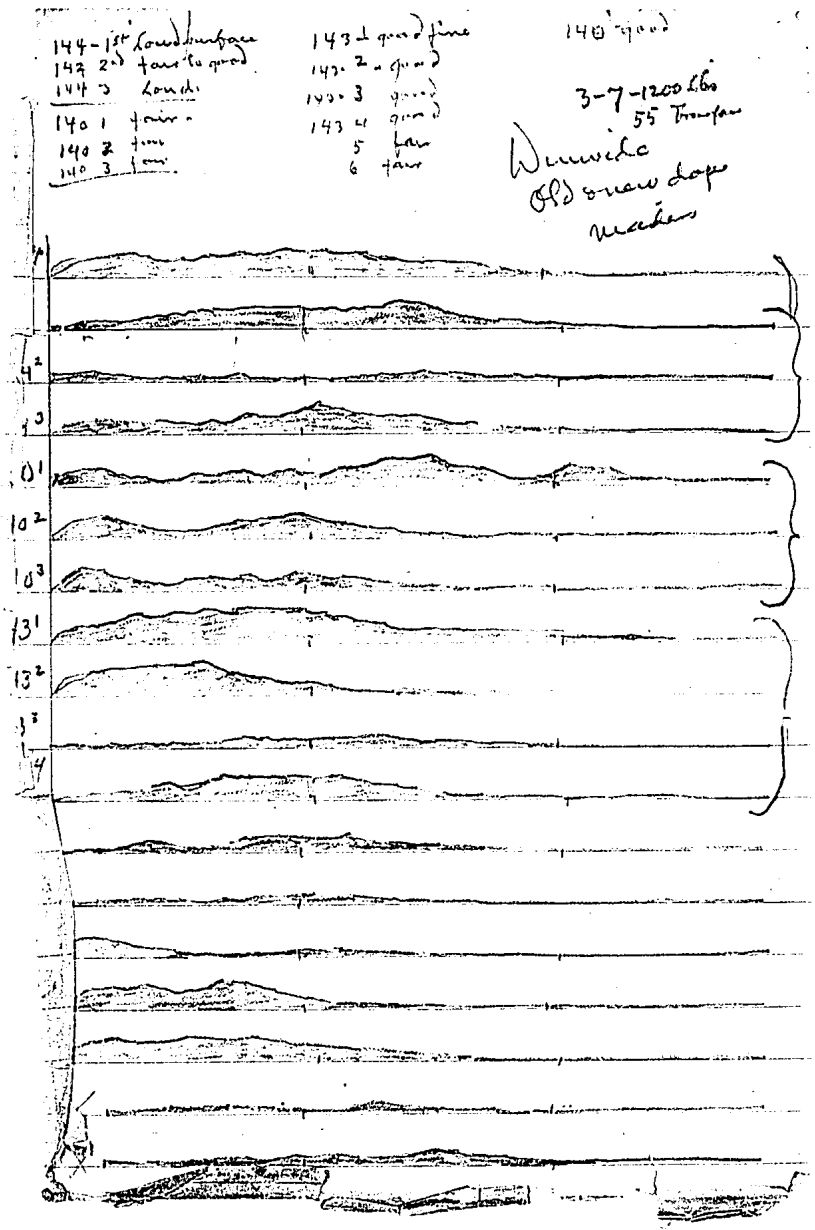


Notebook Series -- Notebooks by Edison
Notebook, N-13-12-08.2

This notebook was used during the period December 1913-May 1914. The entries, which are by Edison and Sherwood T. (Sam) Moore, pertain primarily to the molding, transfer, and printing processes involved in disc record manufacture and to the construction of record blanks. The entries at the beginning of the book describe experimental transfers and indicate the effect of polishing the molds used to print the records. Additional entries relate to the surface qualities and treatment of the master records onto which recordings were made, forming the base for subsequent molds. Another group of notes describes experiments with bumps or "tits" on record blanks to determine if and how the surface might become smooth when heated. The entries in the remainder of the book describe a sequence of experiments, numbered from 12 through 369, which involved pressing powder in blank molds with a pure rubber plunger "to get even pressure all over" during the formation of record blanks. The goals were to smooth off the surplus stock (using various scrapers) after the rubber pressure without disturbing the pressed powder and to prevent the powder from sticking to the rubber. The entries for experiments 12 through 44 are by Edison. Among the results noted are the thickness of the blanks, transfers, and prints, as well as the quality of the transfers and prints. The results of the remaining experiments, recorded by Moore, appear in tabular form. The notes indicate that H. Grimes also assisted Edison. Inserted into the book is a note to employee F. C. Pullin regarding an old dynamo belonging to Edison. In addition, there are seven pages of typewritten comments, which were prepared by former employee William A. Hayes during the late 1940s or early 1950s for Vice Admiral Harold G. Bowen, executive director of the Thomas A. Edison Foundation, and Norman R. Speiden and Harold S. Anderson, curators of the Edison laboratory. The front cover is labeled "8 December 1913," "Mr Moore," and "Experiment on Blank." The book contains 135 numbered pages.

N-13-12-08.2 E5735

Note:

R.O. = run out. Mod. music run out or fades out, due to light printing

Lyle L. Rust
1/22/1979

Acme Co.
MFG. STAMPER
96 [illegible]
19 PLATT[illegible]
N.Y. [illegible]
54472

Evidently not condensed

Surface separated

Mac Dryer 160 Fahr till powder dry
3 to 3 1/4 hours -

719 B not baked - pressed 1000
lbs at 10 lbs vacuum —

Transferred 900 lbs press
80 lbs cleaning

2 min Contact
1 Low -
5 - High 900 lbs
Van 632 Lot 1515 -
3 free one block -

2 OK
2 had specks press cake
last wacc press OK

Print Req Schedule

1 Low	faint
2 "	RO
1 fair	RO
2 Low -	RO
1 fair	RO.
2 fair to good	faint
1 faint to good	faint
	RO

719 - 1000 - LBS LOT 353 -
Rotating top drive in Drill at Lab -

Transfd Req 800 LBS

Printed 1st time Music OK
Edges thin slight fill -

Printed 2nd time on flat
Master Mounted -

1 good vvv faint
2 " no RO

2nd 1 had slight marks from rotating drive

Extra good 1 good no RO
2 good no RO

Dup of 18 – 719 – heavy loaded at Edge Chipping & scraper –
6 blanks transferred 2 men Concealed
1 man Low & High 1000 Lbs
4 OK 1 didn't fell & Cracked 3/16 from Edge other side OK –
not filled  cracks –

One blank OK one side other has smaller pull out & cracks –

Prints = 5 OK – 1 wide Edges off red & Cracks –

---

15 good –	VVV faint
67 good – dusty Yellowish	V faint
15 faint to good	faint
67 fine	VVVV faint
15 faint to good –	V faint
67 good	VVVV faint
15 good –	V faint
67 good –	VVVV faint
15 faint –	NO RO
67 fine	NO RO
15 good	NO RO
fine	VVVV faint

Dup of preceeding page
with Exception of 1000 lbs on
Long Schedule 7 3+7 - Cracks

Transfers 6 all OK one has pull
out around hole (with order)

Prints all have very wide dead edges
unlike Short schedule -
Cracked Edge wide read III
OK III. Long Schedule seems best for
printing

15 - fair	faint
67 fine -	VV faint
15 good	V faint
67 good	RO. Edge faint Cage
15 good	V faint
67 good	faint
15 faint good -	V faint
67 good	VV faint
15 good -	No RO
67 good	faint
15 good	No RO
67 "	V faint

Dec 8 1913 — ⑤

419- Reprints

24 picked out to represent their reversal times —

1 Reprint - 21 OK 3 poor prints Labels OK

2nd same 24 — 22 OK 2 poor prints "

3rd Same 24 17 OK 5 " 1 poor label 1 ckd

4th " 20 K 3 poor prints 1 ckd. Labels OK

Note - discard Cracked one

12 tested = 9 surface good although Consistency No number small scraps at start 1 Bad Run out, one a slight RO as it the Cracked one 8 Had NO RO. 1 VVVV -

The chaos Can represent OK a yet a high percentage,

Will continue to print these

(67)

2074 - Wanda No Romeo & Juliet
Vocal - Blades Gad Moore
Reported it Oct 15 - Yet
Hayes never said anything -
Hood Grimes Jackson -
All Eternity 1265 -
Theo also blasts Gad -
Grimes Jackson Theo
does.

444 719 blanks — 1

Records printed —

Qual Rejected

47 Knocks
15 Cracked
30 Run outs
30 Cracked
42 Bad print
2 scratched
1 Rough surface
12 Poor Label —

90% blanks passed —

60% —

74% of Mould Cavities taken out

Routed by Edwin

1 = 2 } OK. pass # faint — Thin coat paint
V V V V.

1 } W flowers — to much RO on start
2 } OK —

1 } . Little too much RO — Mary
2 } Louann Pucci — too much RO

1 } Louann Pucci - too much RO
2 } OK Mary —

1 } Battle Creek Bad RO
2 } — OK —

1 } Loveland Wally Bad RO
2 } OK —

1 } Cahokia Too Much RO to pass
2 } ———

1 } Cahokia, Can't hear much
2 } RO,
This should have been passed to very good for small RO

(9)

1 } -Cancelled Limit, this Could pass Nothing worse
2 } -OK.

1 } My Heart, OK
2 } Run Out - demanded too much

1 } Magpie OK.
2 } Too much Run out

1 } Magpie OK not too much RO
2 } Too much RO,

1 } Magpie - Little too much RO
2 } Too much RO

1 } Magpie, Little too much RO
2 } Very Bad RO

(10)

1 } Apple Normandy #18 Missed Bad RO
2 } OK —

1 } Normandy #10 Missed — Bad RO —
2 } OK —

1 } Normandy #10 Missed Bad RO
2 } — Little Too much —

1 AB Normandy #8 M RO on Limit - pass
2 — Beyond Limit for RO

1 AB Normandy # 2 missed within Limit
2 OK for RO —

1 } Normandy #2 Missed OK within Limit
2 } — RO Bad — No 8 missed

1 } Jay enjoy heart OK
2 } Happy Race - just within limit

1 } Jay my heart: OK } OK
2 } Happy Race — OK }

(11)

1 } Mixers OK
2 } Too much RO -

1 } Measures OK
2 } Too much RO

1 } In Cans - RO too much
2 } OK -

1 } ~~Cutters~~ Carriers Too much RO
2 } OK

1 } In the Bind - Too much RO
2 } Limit allowance -

1 } Marking Bind OK -
2 } ~~X~~ OK not too much } OK

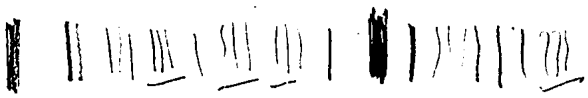
1 }
2 }

(12)

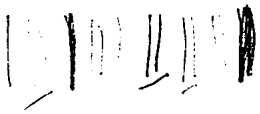
Dec 7 1913

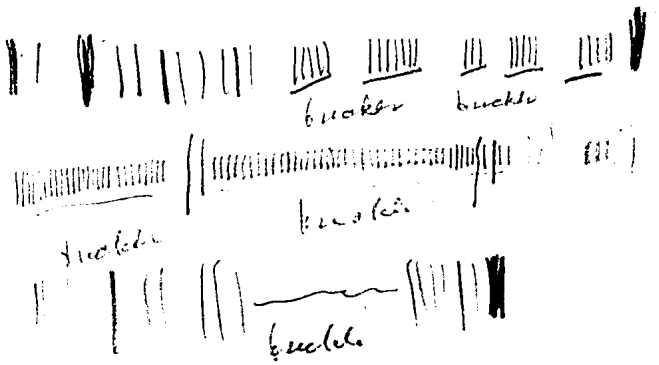
By polishing Mandrels working would 3 times, 6 times over each time -

+ testing Record before packing + after 3 times each day 7/9 & 12 - That surface will readily ~~-~~ unmistakenly impress, instead of a sharp load generally ~~-~~ the packing ~~+~~ record it made it heavier, the time Crackers are much softened - It's presence in the Packing Machine & then Lotta removed would make it work good - Used Carnauba & Wilke brand Razors + Y Chuck Reamers



Has a knock nearly every revolution at place





Grafted Mueller Tracked Blank
G4 — 3 turns of big Coin
1st one done automatically —
1 Rev in 45 seconds —

VVV RO — Rather Loud General surface seems of surface was made up of very fine cracks. Has a ring in addition to general scratch —

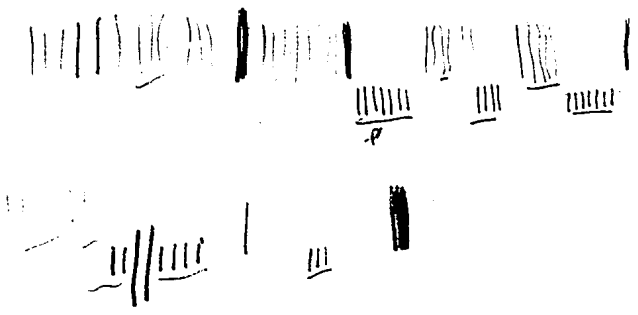
Not good Enough

G4 2nd Print

VF RO — surface better than 1st print
Bad knocky about — Rings bad,
Surface pretty fair,

Knocky trouble is 1st Coat too thin, should be 2 or 3 Times thicker, when we have enough to Reg & with good Either surface gets bad or don't need good or deep quality of Copper

(15)



(16)

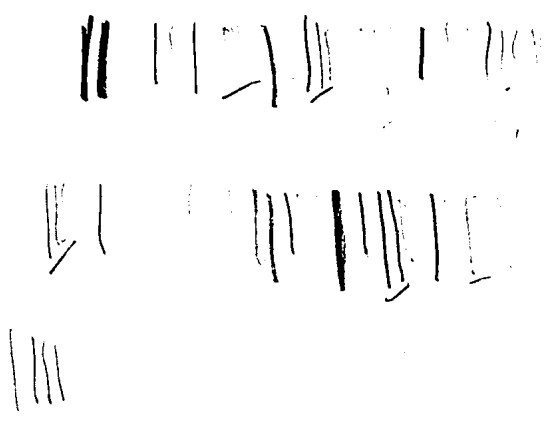
G-5 = grafted
10 turns of Cam—

VVV. Rings - velvet - VV —
now only hear RD V — Rings
Can't hear grand pipes, etc
x Rings however

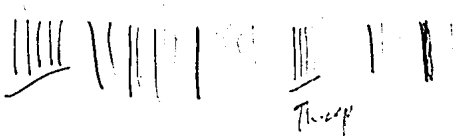
Not good
Enough

(17)

Bad Hard

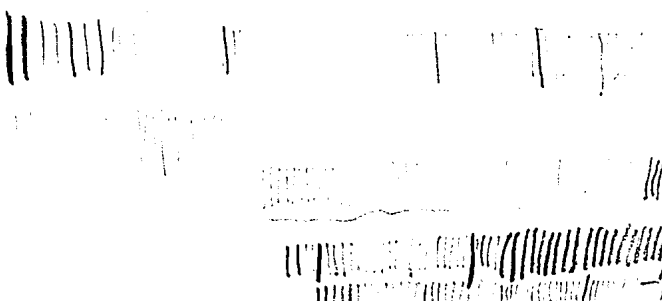


2nd Print



Thump

3rd



1/16 of 2nd

(18)

G. 6- Can record and 6 times, Boxes Placement 719 Blanks — appearance looked Clean when put in grafite box — Didn't Look at it in Micro --

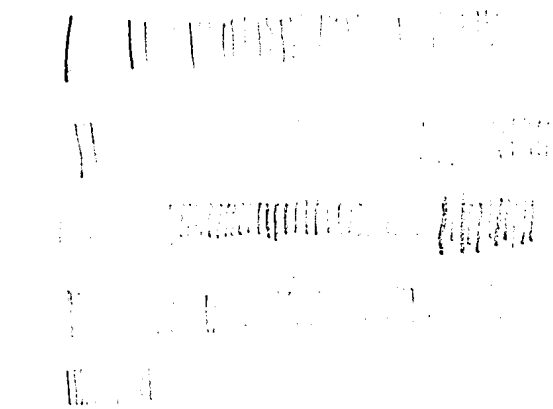
Loud - No RO - Rumple RO Corners on 1/4" in — 1" in nearly velvet / V RO - 1½ VVV velvet near end fair to good on Smoothness

2nd Print

Very Loud - VVV - 1/8 in Surface fair RO Smoothness but ovation not sharp 1/2" — VVV last 1/2 of Record fair to good surface

3rd print Loud VV 1/8th fair surface V

Next record Embossing 7/8" 1 1/2" Placement Clean Embossed Surface good Many Hard & Soft areas covered Evenly



#2 Better wash

G6 = 3rd Print. Recoated by Moore

Better start, good in 1/8 V

Must see dirt on blank before printing —

#2 again washed (acid

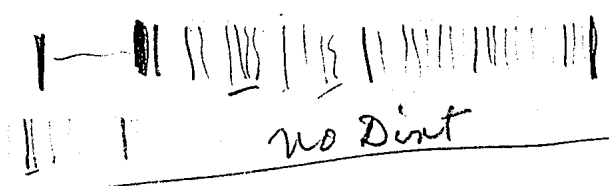
good uniform RO, - disappearance

1/2 way across —

The washing in making a test of a mixed is very important, The handling of test blanks etc acid way there is very important to prove out mixed,

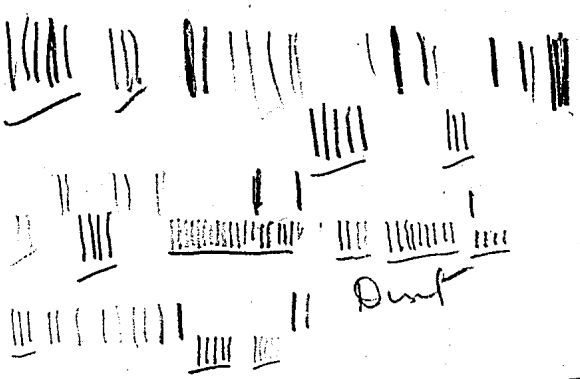
(21)

1st



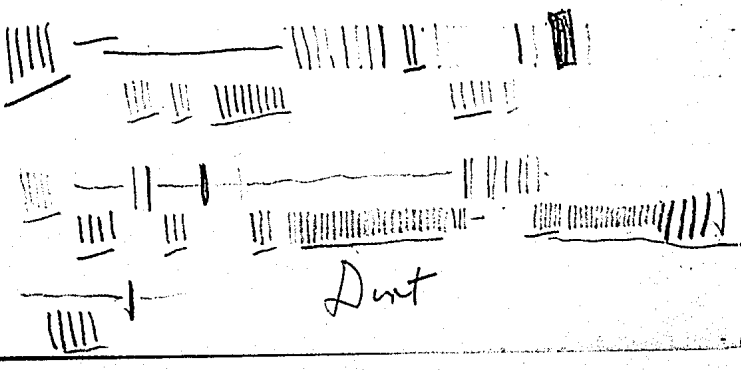
No Dirt

2nd Print.



Dirt

3rd print



Dirt

(22)

1st Print.

G 7 - 20 Times of the Cam in grafting —

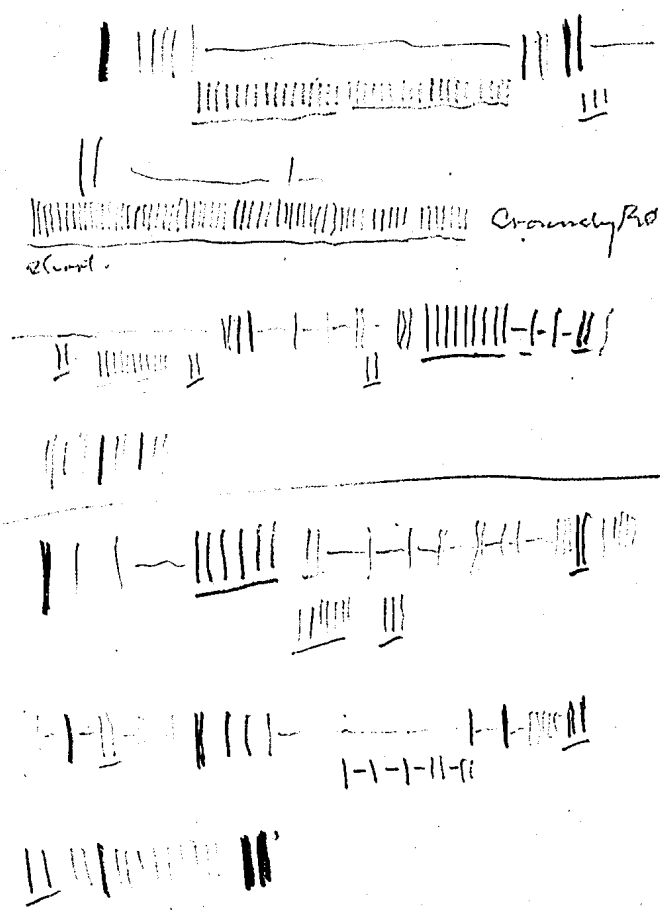
Fairly velvet No RO at start 1/4" in VVV shades after got in 1/2 good surface VVVV — First start general surface is louder than should be but after get in 1/2 inch surface is good, but not Vgood —

2nd Print

Surface Velvet good - No RO - 1/4" in RO Lasting on 10 sec & thumps. has thumps of from 15 to 4 - groups of threads all through — General surface good but not Vgood —

3rd Print surface fair to good VVVV Not as good as 1st & 2nd

(23)



G6 X°1 print on Celluloid

Start Rough — 1/4" in only fewer Surfaces about as Round as Condensed —

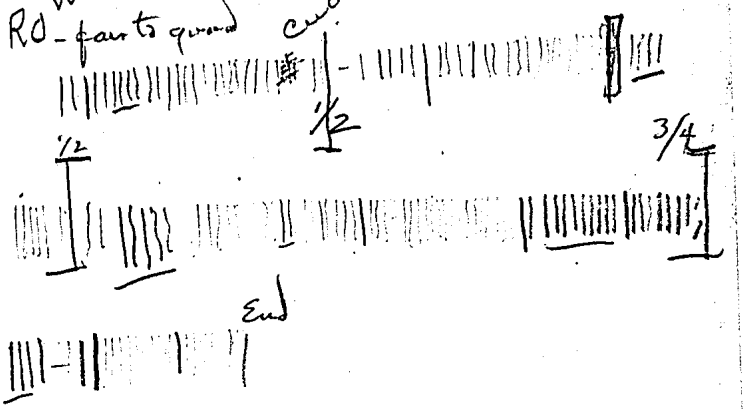
2nd print on Celluloid —
better than 1st. RO on this —
better surface —
general Surfaces better than 1 but
fair to good.

(25)

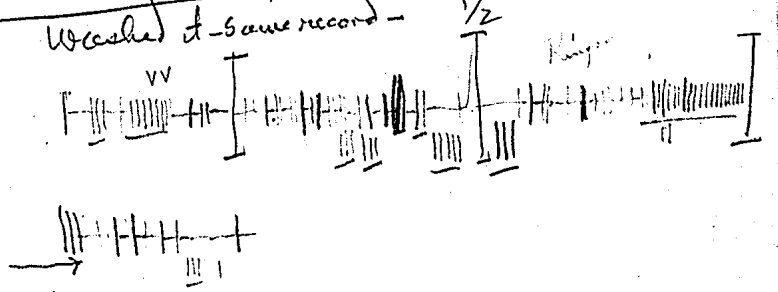
G-7 = 5th print - Printed record with clean blanks + Care used all way thru

(26)

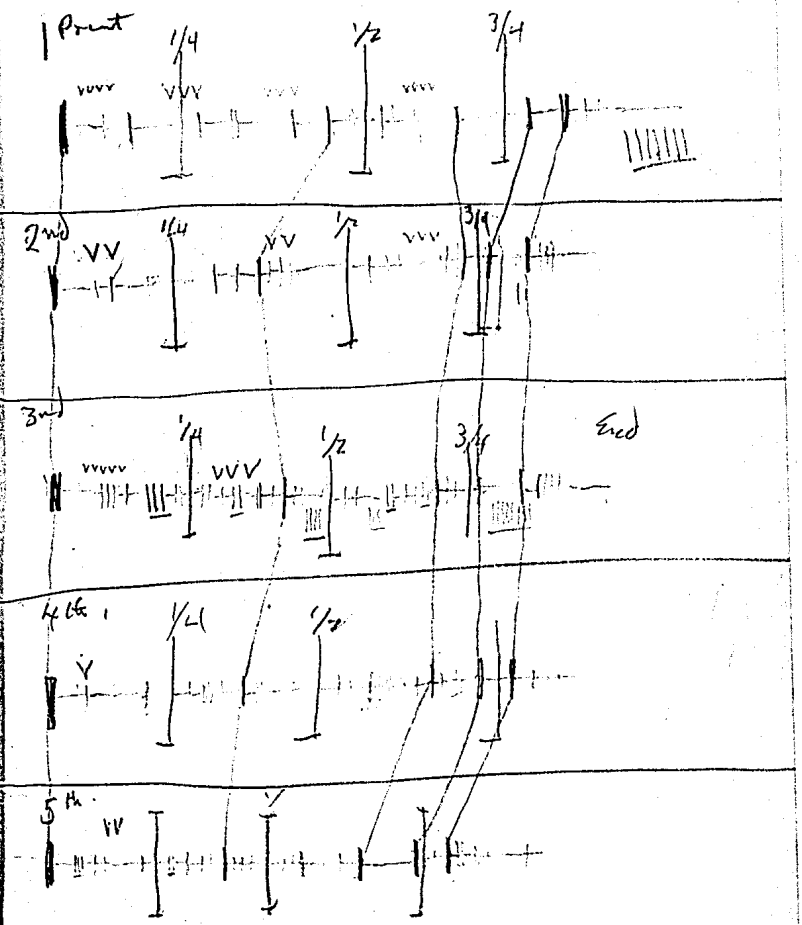
RO - VV - fair to good cutting



Wrecked it - Same record -

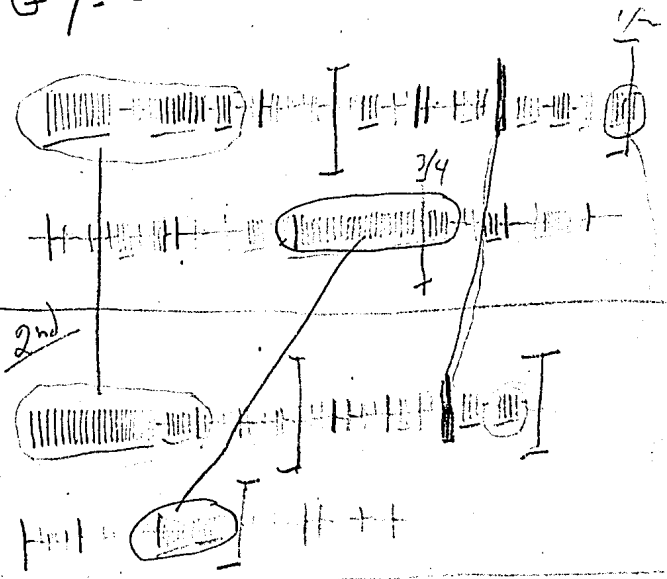


No 6 – 5th print.



~~G7=~~

G7= Leached + Primed with Care



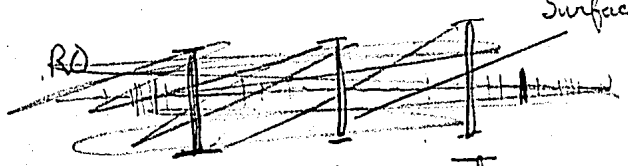
mechanical -

Doubtful S
1

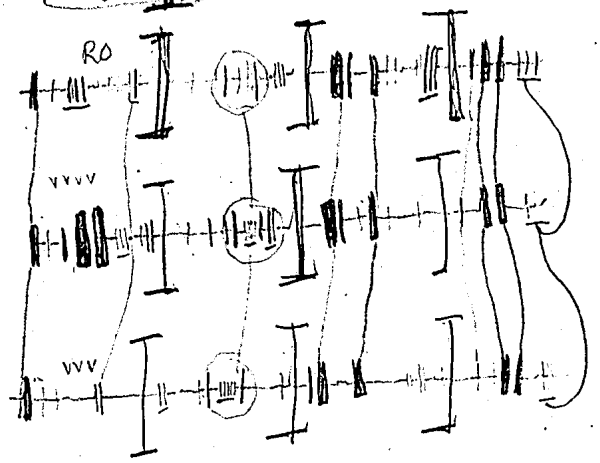
G 8 = Pad changed Twice –
Washed – Care Taken all way Rim –

Surface fair

5 1

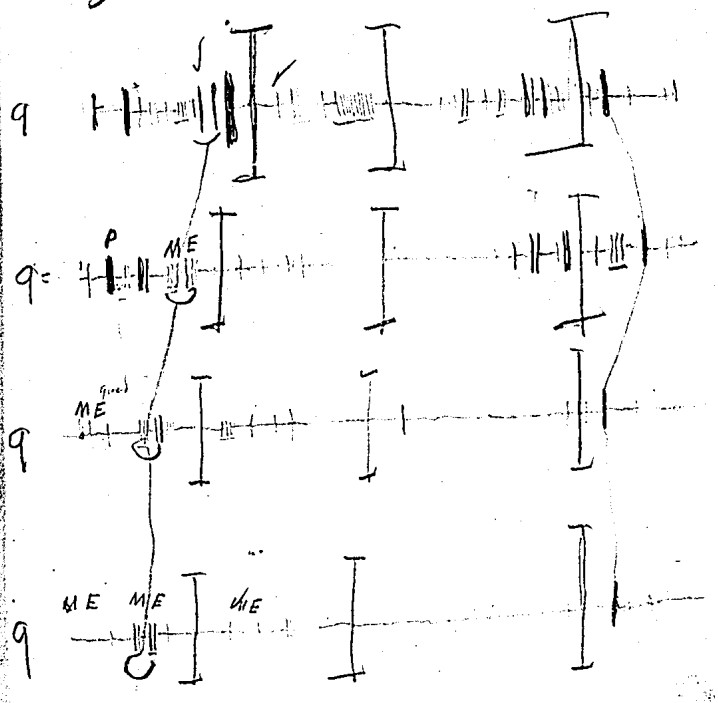


8



8 =

G 9 padchanged 4 times —



Experiments with Tito on Blanks + heating only to see if Tito sinks, or

Big blanks 12 – 2 min heat in press – Tops not in contact with next plate, 1/16 away

1 = Now sign of the fit mark on either Top or bottom, – shows small space on bottom where label represented

2 = No sign on top – shows trace of Contact around center hole bottom plate

3 = Nothing on top – trace of music on bottom about the center of music – No sign Tito

No 11 - Nothing on top - Bottom - Trace of Label & one tit

12 = Nothing on top. shows trace of Label & one tit -

These shows bottom moulds are nearly hot enough. but Top moulds are not hot enough to prevent mould from sweating

Also the further you go down the holler the bottom mould gets = Inquire how these were taken out -

4 = Bottom - Trace of Label - Trace of a Tit on bottom nothing on top -

5 - Nothing on Top - Bottom - small part of Edge of Label shows -

6 = Top nothing shown - Bottom Label + music shows in spots

7 Nothing on top = Bottom trace music -

8 Nothing on top = Bottom Edge Label: [illegible] Music all round

9 = Nothing on Top = Bottom shows Considerable Music

10 - Nothing on Top - Bottom shows of Label

6 = Top nearly filled - Cooked blank looks like soft blanks - Turning out

7 = Top part Label, Music, some Edges Tits good Tits Bottom Some Label, only faint Cream Music - Tits good

8 Top part Label + music all around Edge - Tits showed equally - But Music + Label at def plates - Tits good -

9 = Top Cream Label + Yellow music at Edge Tits not good Bottom same -

10 = Top - Center Label Cook pressure little music on edge Tits faint Bottom like Top -

11 = Top - Music def parts, Label a little faint Tits - Bottom - same as Top but Tits strong -

12 = Top - only Label tits pretty good Bottom like Top -

Evidently Tits not high enough

12 - 3 minutes in Contact no preliminary heating -

1 = Top - Nearly whole Label printed 4 Tits shown - Bottom - Label 2½ dia + 4 tits shown -

2 = Top outer Edge Label shows 4 tits shown part of music all around outer Edge for ½ inch shown - Bottom about same as Top - Tits show up good -

3 Top. No Label shows - outer Edge music shows - Tits show up good - Bottom Light Green from Label - Tits show up good -

4 = Top Label shows nearly all outer Edge shows music Tits good - Bottom same

5 Top - burning in Center - shadow of music - Tits not shown good

(37)

10 # Top - Slight traces music Edge - traces of Edge Label Tits faint - Tits faint
Bottom - Tits good - Little music on margin

11 = Top Label on margin - music faint on Edge Tits good
Bottom dots -

12 = Top - Slight traces Label + music Tits good
Bottom same - Tits good

Find out how these taken out
press

(38)

2 Heat - 3 Contact - Contact means Top plate you can just see Light thru it -

1 = Top - bushing track press. Some music all over Tits good - Bottom Like Top Tits good

2 = Top - brush out Label music on Edge Tits good - Bot Like Top, Tits good, not as much music shown.

3 = Top Label nearly full) a comeback Music Tits good - Bottom Same

4 = Top thru Label - Music all around Edge Tits good - Bottom scarce on top -

5 = Label shown - music at places Tit. faint - Bottom dots -

6 = Music around rim - faint traces Label - Tits good - Bottom dots

7 = Some label - Music slightly on Edge Tits good - Bottom dots

8 = Brush takes pressure little music on Edge Tits good - Bottom dots

9 = Soft Blank

(39)

Wants higher tits

So that on 2 min heat it shows no point of any kind —

The tits as they are now would be OK where it not that blank blanks are unequal

(40)

1 min Heat 6 Contact,

1 = Top - Some Label + music one edge Tits OK. Bottom dells -

2 = Top Label - Tits good - Bottom one same

3 = Top + Bottom show considerable music Tits both sides good

4 = Both sides show considerable music — Tits good -

5 = Same as 4.

6 = only little music tits good - both sides same

7 = Tits good - some music both sides.

8 - dells -

9 = dells -

10 = Some music both sides - tits good

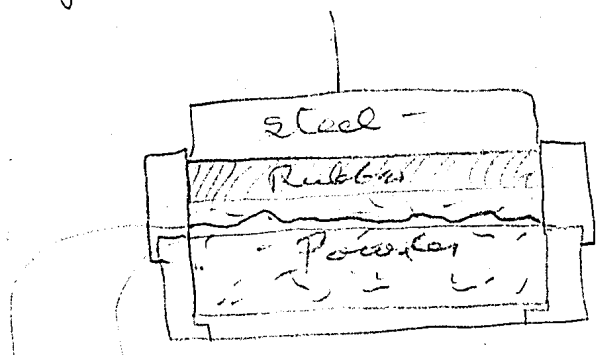
11 = dells

12 = dells -

9 10 11 + 12 don't get as hot as 1 2 3 4 — How much they taken out,

April 24 1914

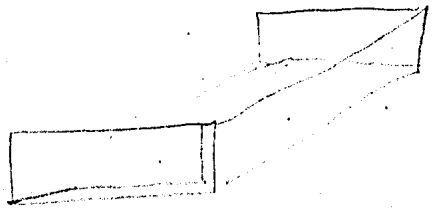
Expts with pressing Powder on blank moulds by pure rubber plunger to get even pressure all over



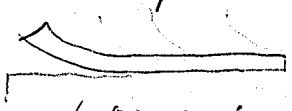
Line showing minimum pkg

Line after removing overpressure

Then Steel disc is put on & pressed Reqn quite even homogeneous blank gives high % Transfer Prints



Tried How to scrape off surplus — No good
Tore great chunks out of surface. Wire Brush too fair to cut but not remove surplus then remove surplus by an Edge
The lifting up of rubber didnt left surface up like with the piece of Rubber



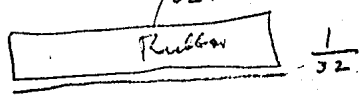
Lifted it this way

2

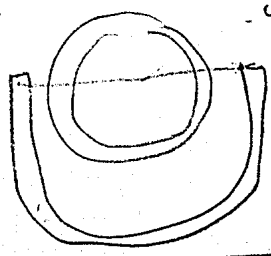
Experiment tonight is to find good way to smooth off the Surplus stock after Rubber pad pressing without disturbing the powder in mould that has been tied to prevent sticking of powder to rubber and to get it cleaned cheap

No 12 =

1/32 less clearance



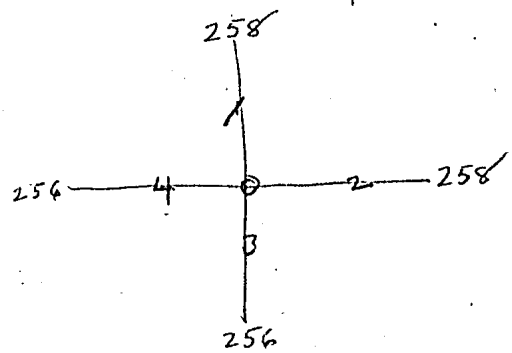
300 Lbs — on 12" Ram —
Tried Wire to cut off surplus wire.
Then
450 Lbs To inch on powder



(44)

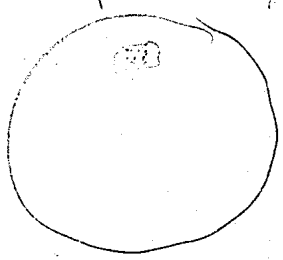
#12

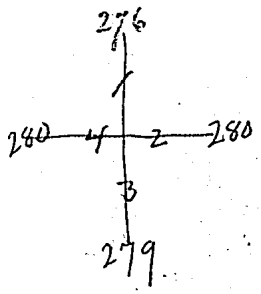
Calipers



Transfer

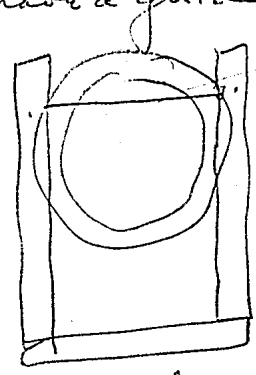
very shallow, only slight load seen on opposite





(45)

but if wasn't made right, must have a guide (Thumb

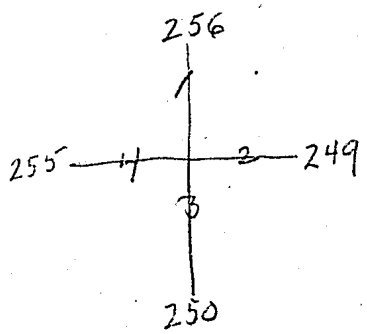


then wire wasn't spinning —

The soft 1/32 Rub + 1/2" Rub lifted & changed up — didn't check surface scarcely any —

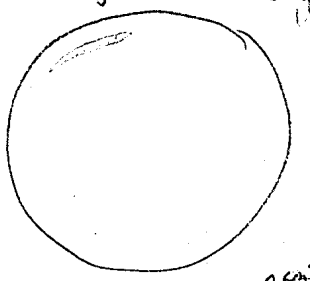
Little wide cut then Rumpler without changing & did be a saving — I DE cooled Rumpler & with straight edge but we'll among a Reg dirt scraper type made —

#13 Calliper



Transfer.

both sides - fast speed - double transfer - 12 spot items - 12



Transfer

Calliper

299

285 285

275

Print OK -

Circulation must be even or uneven effect -

#13 -

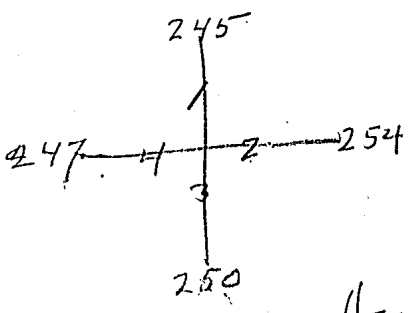
Rubber disc - no Extra precaution only slight air bells - used wire it dragged out only a little in and thick spot it show be guided & held in frame

On 13 we used the Scraper with rounded edges it don't run much in box but Comes up in front & approximately is not the timing

(48)

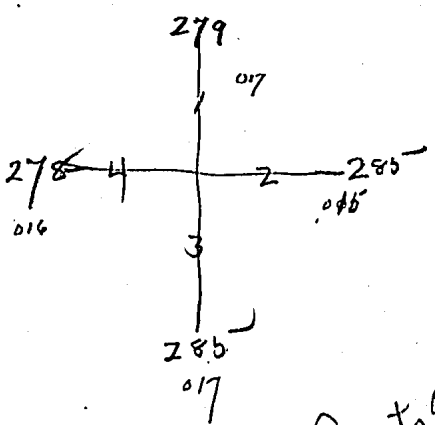
#14

005



#14

After Ironing



007

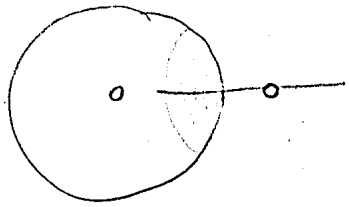
Prints ok

(49)

#14

Req way 300 lbs on 12" Ram packed | Req scraper — Rubber pad

Scraped off by radiating flat scraper



Turned around + advanced in 1st

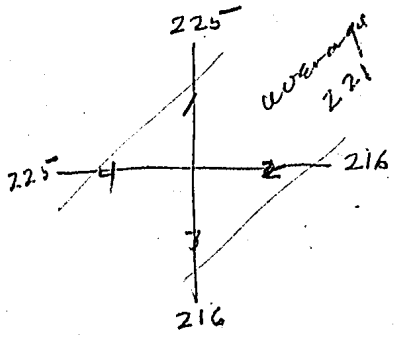
Shows form of scraping — perfect, dont disturb surface we want + does it very nicely — + finished up new upper mat | makes mistakes —

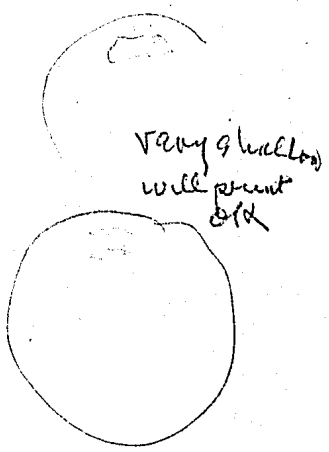
(50)

1-6 #15 2

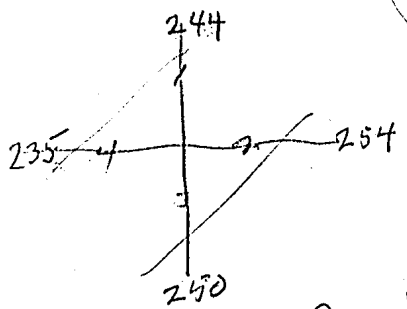
Blank

Dec 009



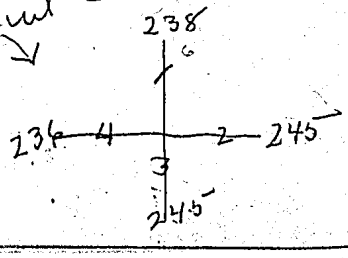


Drawer pan



019

Point is OK



(51)

Apl 26 1914

#15 = 37 scraper (new)

Use Ring turned down another tenth off each now 6/10 ~~off~~ by using 450 ~~grits~~ there is no full 1/8 Excess — Lead grinder Excess by rotating front scraper wears first —

We had trouble get out Rubber pad but ~~expensive~~ especially steel plate stuck hard in brass ring —

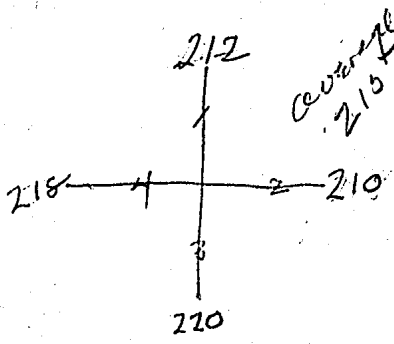
We didnt set scraper down so far on this dent hammer wood young — didnt condemn stopping much as scraper not down too far on regular

Moore marked low side, angle marked Edge —

(57)

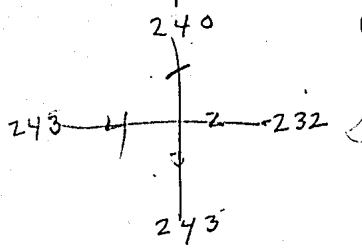
749 Varnish
5% Xylene

16 Blank



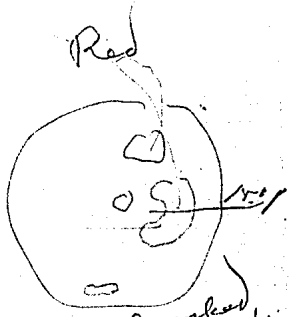
Deflection
-010

Transfer

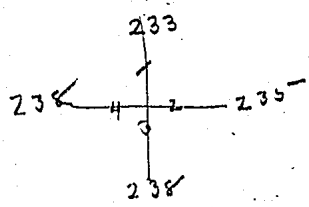


011

OK



Print



Print OK

(53)

16

450 grits - 37 scraper

Not Rapped —

Surplus Milled off by Triangle Scraper

as we don't rap this is likely to be less Calliper than 15 =)

The Rubber pad clamped on Moore & slide it off — & decided left it surface fine — Edge rather torn off Edge of surplus but this don't matter as it must be taken off anyway

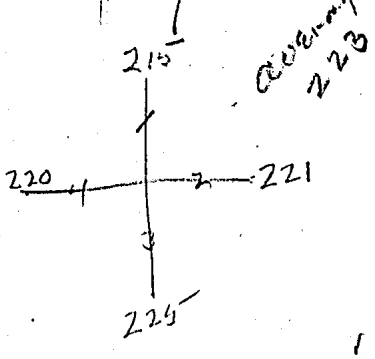
Put mat & pad scraper & material all going to Center & then turned to mill off surplus

Raised Uphole Mould Clear across scraper

#16 It couldnt go far
Enough so we went nearly
across & then turned
the mould —

We can fix this by
2 Extra leafs that can
be let down between
reg leaves as I explain

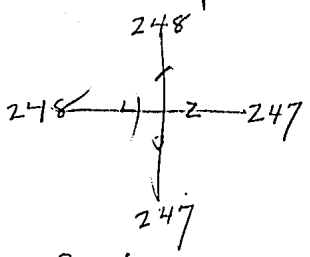
#17-



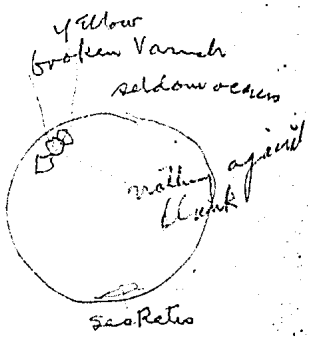
Average 223

Def 010

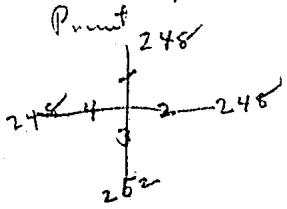
Transfer



001



Print



Print OK

bigger after plating or no change -

479 Vam

#17

Straight Scraper 450-

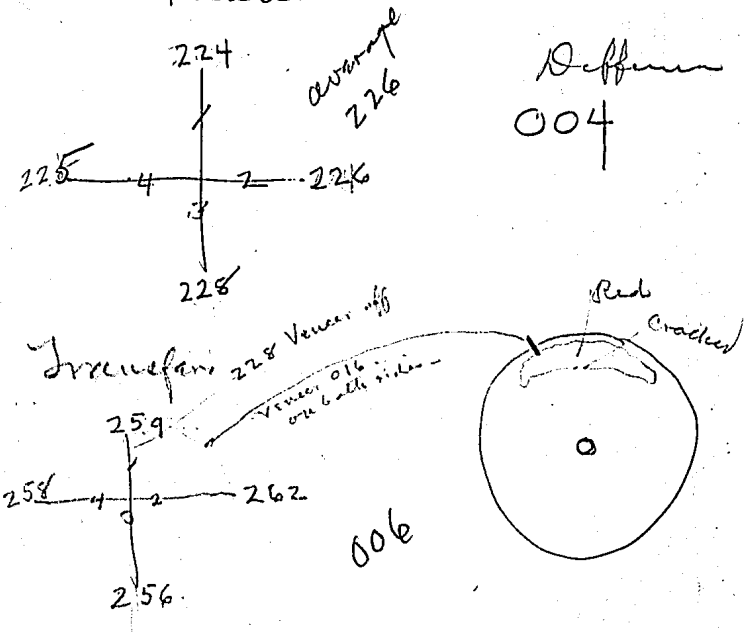
Rapped -

In stripping put under magnet - then pressure on steel disc & rubber - then pressed brass ring then pressed steel disc by magnet then pulled out mould & rapped Rubber ring from Coming with it dust part surplus powder scraped off - Cost its OR -

Had to turn mould to mill off as in was too long - disc handle plating scraper low enough to scratch surface to mill off -

(57)

Blank



(58)

#18 19# Bad Trans 779 Van

Drop of 17 -

Strait Scraper

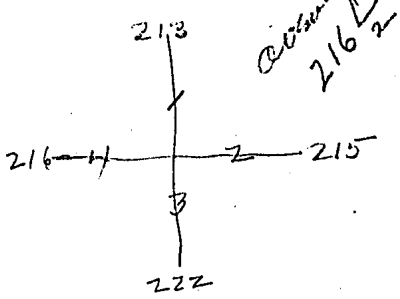
Ng

Where the Red is looks as if not drawn tight and of Veneer to thick have to go Cooked out but being pressed & shearing it where shear or clinched - seems to show that if veneer too thick one side of wheel Cannot Flex

Note # of Veneer

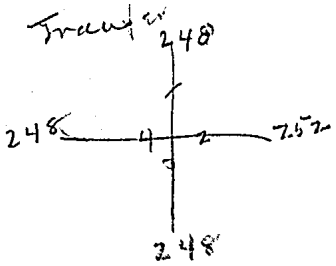
(59)

Blank



Def
009

Transfer

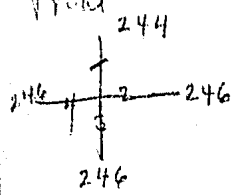


004
OK

very light
non-printing
balloons
and
ovals

Transfer

Print



002

Slight smear on
accumulation
negligible
OK

(60)

#19

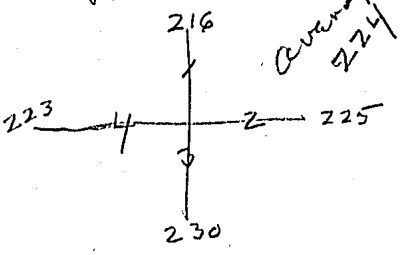
Dup 17

OK

Yyy Var

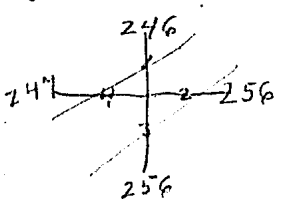
(61)

Blank

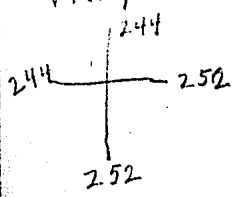


average 224

Transfer

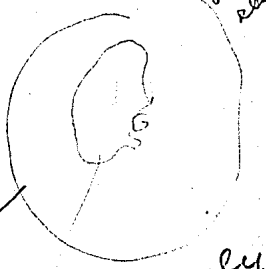


Print,



016 – 014

010



(blank received very shallow)

1 Bad

overdeveloped

OK Transfer

Print OK

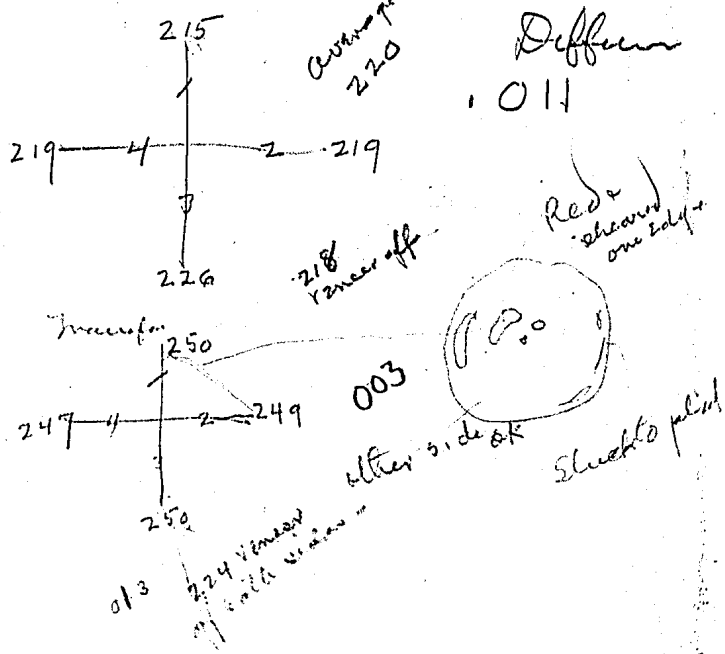
(62)

20 MMQ Van

Drop of 17

OK

Blank 21



21 779 Van

Dup of 17

No good

Thicker veneer at left end sheared and upset,

Red End 035 for both Veneers
good End 026 "

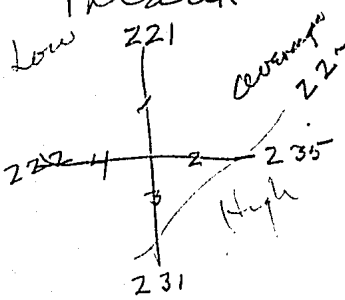
Lts per

Note Variance

(65)

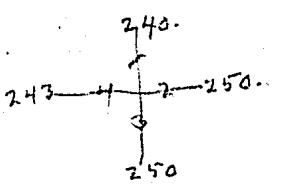
632 Var

Pulley



014

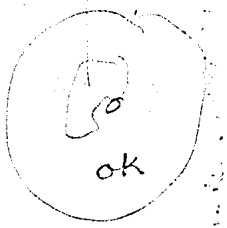
Transfer



OK

010

dark Shell 10



(66)

Rubber faced
to steel
pulley 22

All Numbers up to
including this, Green
Tapping at 40 per min
instead of 60 belt slipping

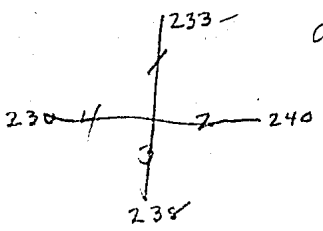
Secured Rubber to steel
by Pressure

This is 1st one made this
way its the 1/8 small
of not the 1/32 smaller
Dia Rubber

(67)

All blanks up To & including 23 made on No 15 press & spool coils - lefts up first.

Blank



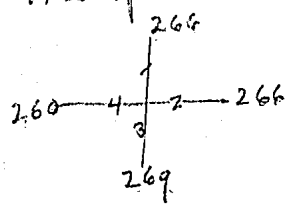
Def

.010

ave Caliper

235

Transfer



.009

Transfer OK
no res

16 ots

23 632 Var

(68)

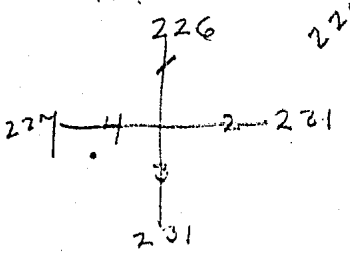
The Hammers belt been slipping up to Now 60

In raising up the Rubber it pulled up surface near Edge somewhat badly - all over there are waves scarred that are 10 or 20/1000 high- but its above the surface + probably only occurs in the lapped + about extend to good part,

Filled some lines over surfaces -

24 & hereafter well 66 made on No 4 pressure adjustable connection

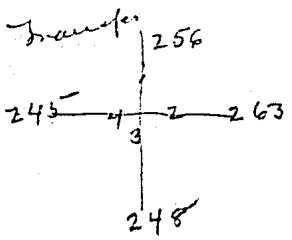
Blank -



229 average

005

OK



018

Transfer OK - no Red

#24 632 Van

Drop of 17 - Hammer Run 2½/min - which = little but longer because probably a scraper was set a little lower -

Surface after Casting Rubber were good on this, only 2 or 3 slight ravines -

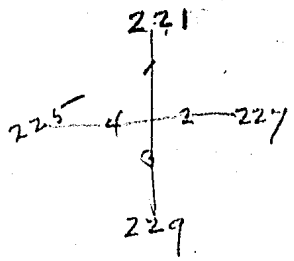
This one has the large full size Rubber in - it stuck bad in Brace ring - Its took big Caught Rubber & tore it.

Must use 1/8" Smaller instead of this 1/32 -

(11)

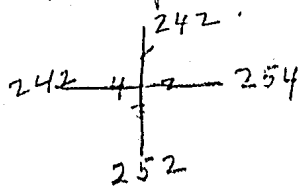
632V

Blank



008

Transfer



010

OK not
alignment ridge by
angle bracket w/
splats -

Print OK

No cracks
or pinholes

(73)

25

632 Vam

No 4 pins

450

Hammer 60 one one
min stuff all spread -

Hammer (60) one min -
max all spread

Note from 15 to 23 -

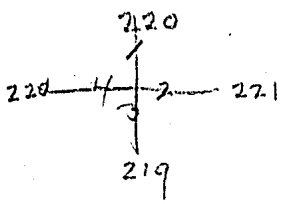
#15 to 24

Dif in Collet Adjustment

15 pcs	009	221	72
	010	215	not rapped
	010	223	
	004	226	
	009	216	40 spread hammered
	014	224	
	011	220	
	014	227	
	010	230	60 spread hammered
4 pcs	005	229	"

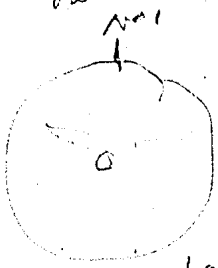
174

Blank



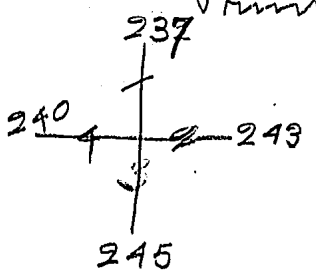
002

Blank No 1



dark shiny

Print



008

75

26 No 4 Press

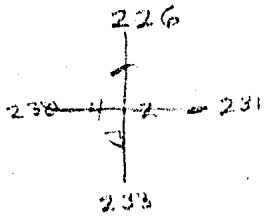
1450 – Start Scraper

Hammers (60) on Oke mix – May [illegible]

Hammers 60 – about mm to mix –

(76)

Blank 007



007

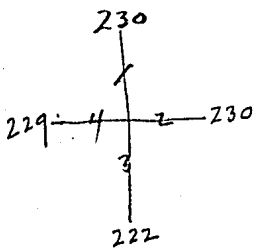
Points OK

(77)

27- 4 pres
steel Scrapers 60 knox

(18)

Blank



008

Print OK

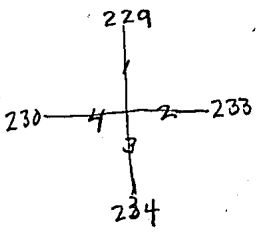
(28)

28-

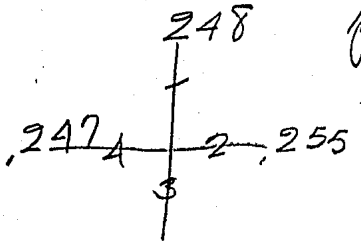
Straight Scrapes - 450 grains. 1/8 pad

(80)

Blank



005



form OK

006

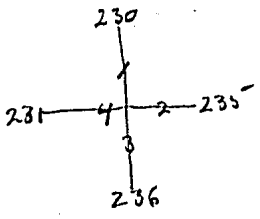
(81)

No 29 -

~~Straight~~ Scraper 450 grain 1/8 pad

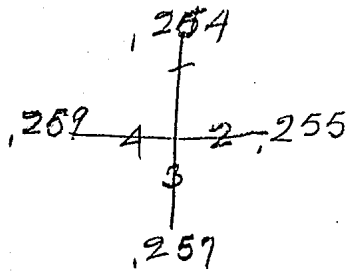
(82)

Blank



006

Punch OK



005

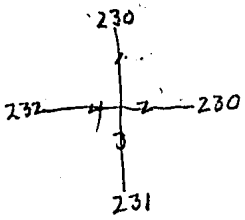
(83)

~~N030~~ Pad 1/8 less dia than ring

~~Straight~~ Scraper .450 gram 1/8 pad

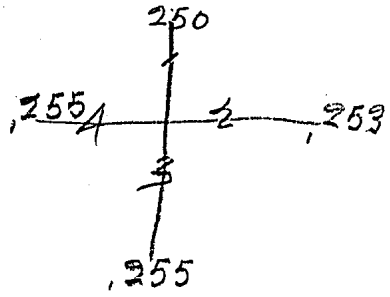
(84)

Blank



002

Prints OK



003

(85)

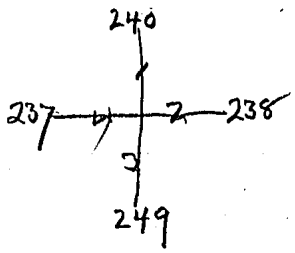
31-

Flint Scraper 4450 ± pad

3 1/4 mm for powder to leave

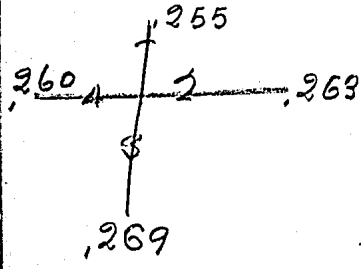
Flint Edges - blades act low

Blank



009

Prints OK



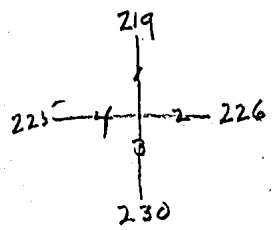
014

32

Strait Scraper 450 ~~1~~ pm

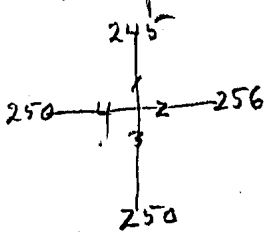
One minute for packer to remove Strait Edge in pkg

Blank



009 -

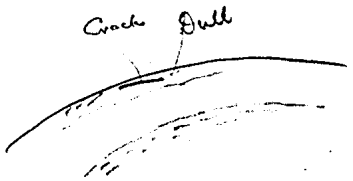
Transferri

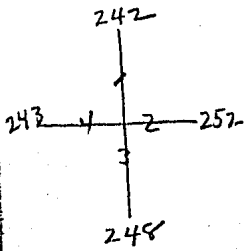


011

632 Var 208 Lat.

Print OK full print





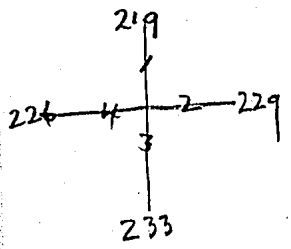
010

33

Straight Scraper 450 gram 1/8 pad

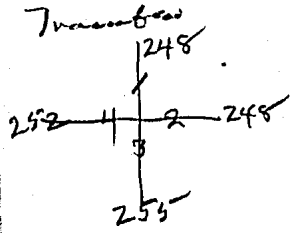
Pkg 1/2 min on Gracl Scraper
to leave Scraper Hammars 62 min

Blank



014

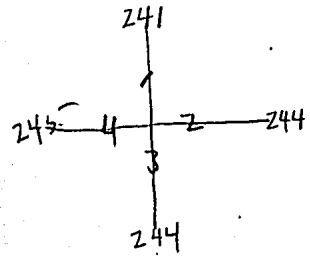
Transducer



632 Var Lat 208.

007

Print OK. no cracks - full print



004

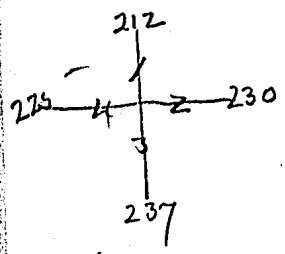
34

~~Grout~~

1/2 mm To pack -

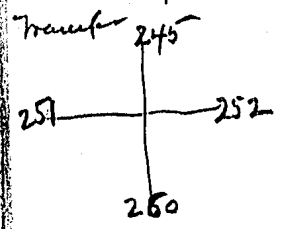
(92)

Blank



025

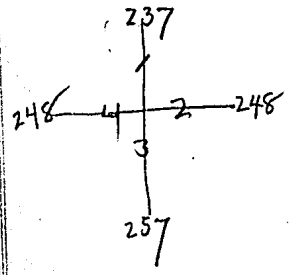
Transfer



632 Var 208 Lat.

015

Print OK – full print no cracks



020

(93)

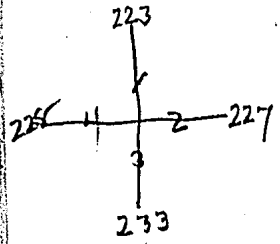
35

~~Straight~~ Edge

1/2 mm Taper

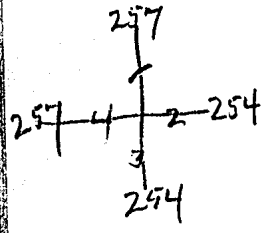
94

Blank



010

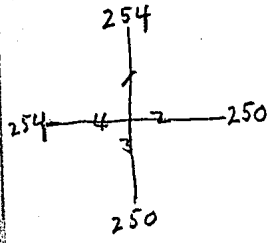
Traceefax

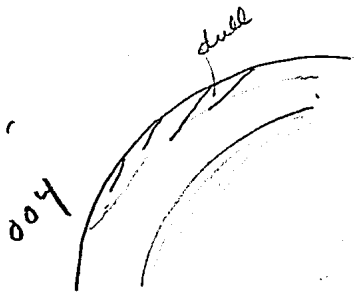


632 Van Lot 208,

003

Print OK full print,





95

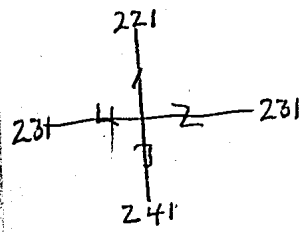
36

Straw Scraper

½ mm load

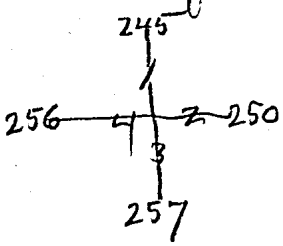
(90)

Blank



020

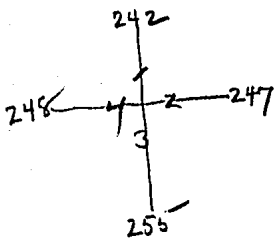
Transfer



632 Van Lot 208

012

Print – Ok full print no cracks –



013

(91)

37

Strait Scraper

1/2 mm load –

98

Blank

227
227 4 2 228
3
230

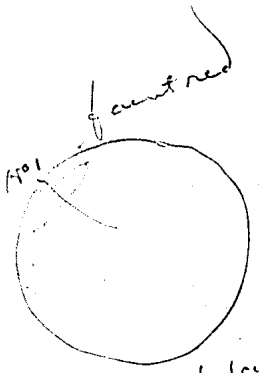
003

Transfer

253
253 4 2 245
3
246

007

632 Vars
Lot 205



Print OK — nearly full but OK.

250
248 4 2 246
3
243

007

99

38

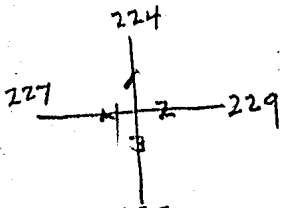
62 Knox

Strand Scraper
1/2 mm to Lead

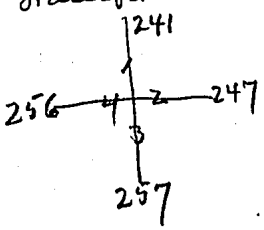
(100)

Blank

006



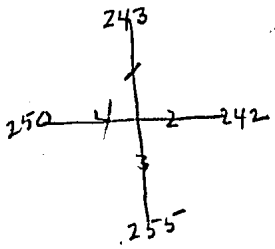
Transfer-



632 Var Lat 208

016

Print OK - filled fine cracks on dull way at Edge -



017

(101)

39

Strand Edge

1/2 mm

Blank

228
232 — 230
232

004-

Transfer

254
261 — 245
266

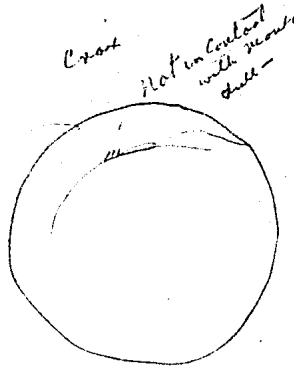
632 Van Laf 208

021

Print OK Comd-

257
256 — 257
259

003



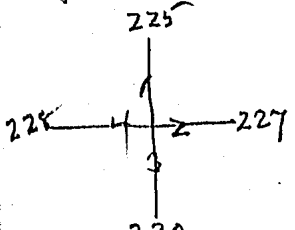
Due probably to Uneven Varnish - see Callaped

40

Strait Edge

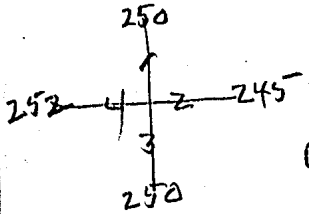
1/2 Minn - 6z Nox

Blank



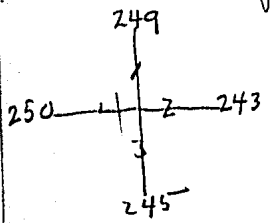
005

Transfer



007 632 Van Leaf 208

Print Ok full print no cracks -

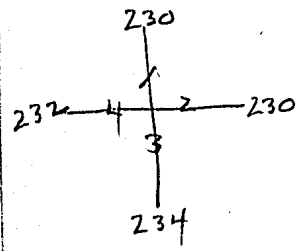


007

41

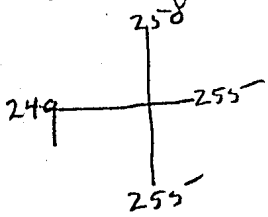
Trail Scraper 62 nox
1/2 mm

Blank



004

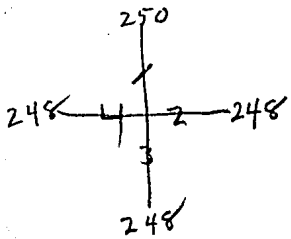
Transfer



632 Van Lot 20-8

006

Print OK filled no cracks -



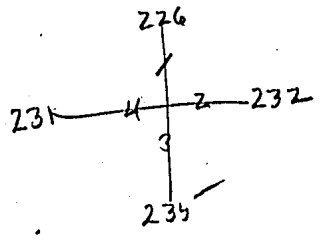
002

42

Retract Scraper -
1/2 mm Loading

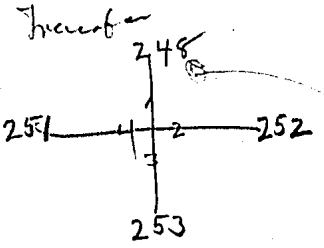
(107)

Blank



012

Transfer

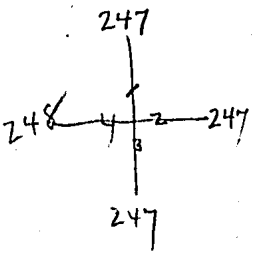


632 Vacuhat 208

004

Lightfield hat OK-

Print, OK-



001

(108)

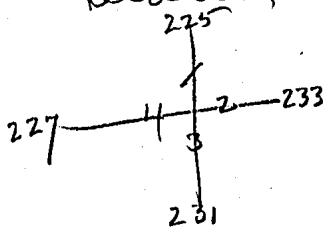
43

Blank Scraper

1/2 mm

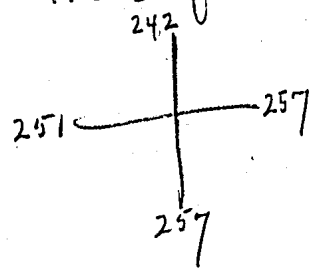
(109)

Blanks



008

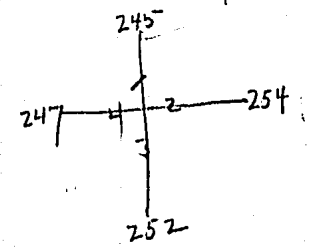
Transfer



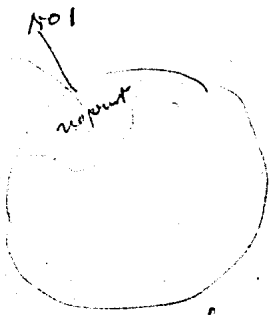
015

632.V

Print Badprint



009



otherwise ok -
will reprint —

(110)

44

Strait scraper
1/2 min loading

Have this reprinted

from 32 to 44 —
12 Blanks 100%
12 Transfers — 100% good
12 Records 92%

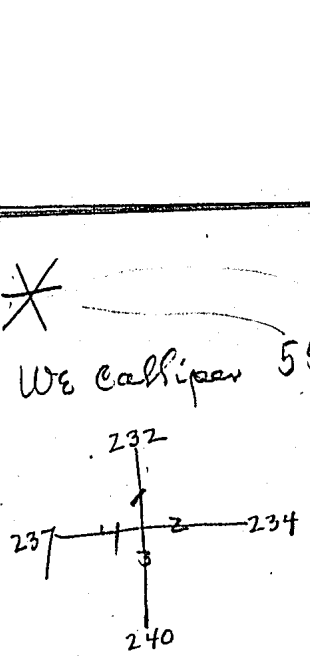
but last print ok but didn't
fill music, will reprint —

Up to here 44 Prints
3 lost, 94% Prints
100% Blanks
100% Transfers —
of the 3 lost I will reprint a
the other 2 were a special Varnish
& lost due to the Varnish —

(111)

*

We calipaer 55"



008.

*Moore says its in Press

12 Prints all OK

(112)

Straight Edge-Loader

.45 Lact -

46	55 sec Loading
47	55 "
48	52 "
49	55 "
50	55 "
51	50 "
52	60 "
53	60 "
54	60 "
* 55	60 "
* 56	60
* 57	45 "

12

We now transfer & Print these,

* noticed one edge of metal disc in hydraulic lowered than other edge this only just noticed - might have been down at right Loony

(113)

30 sec Loading
30 " placing Rubber pad in
60 " placing Mould in press
30 " Removing Rubber
60 " Scraping off
30 " putting Cover on
240

With auto scraper save 50 sec
Making it 190 seconds

60) 190 (3 min 10 sec
180
10

About 3 minutes, that is
200 in 10 hours.

Think Can do 250 in 10 Hours
when Everything rigged up
right.

(114)

Starting at #17

No 1 Caliper 224 Transfer 259 – 35
1 " 213 248 35

Calipers on No 1 Line

	Blank	Transfer	1 print	Def
18	224	259		35
19	213	248	244 .004	35
20	216	246	244 .002	30
21	215	250		35
22	221	240		19
23	233	266		33
24	226	256		30
25	221	242		21
26	220	237		17
27	226	—	—	—
28	230	—	—	—
29	229	248		19
30	230	254		24
31	230	250		20
32	240	255		15
33	219	245		26
34	219	248	241 .007	29
35	212	245	237 .005	33
36	223	257	254 .003	34

115

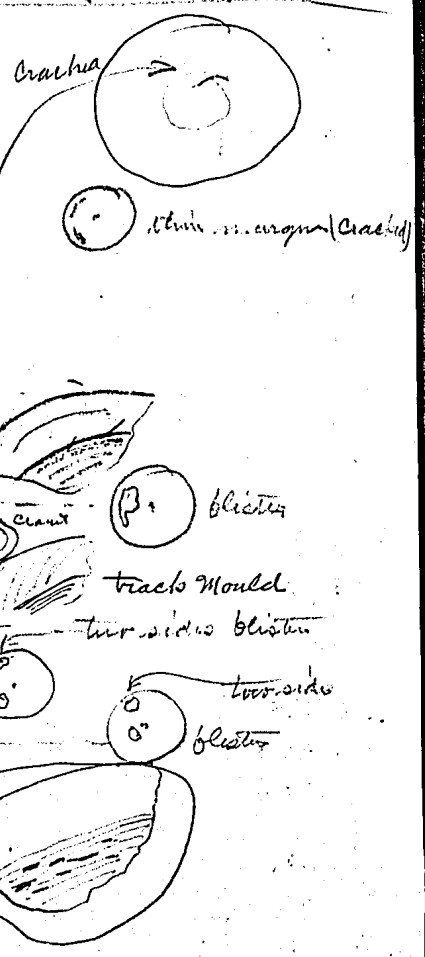
Glow

	Blank	Transfer	Print		diff
37	221	245	242	003	24
38	227	253	250	003	26
39	224	241	243	+002	17
40	228	257	257	000	29
41	225	250	249	001	24
42	230	250	250	000	20
43	226	248	247	001	22
44	225	242	245	+002	17

No print not filled

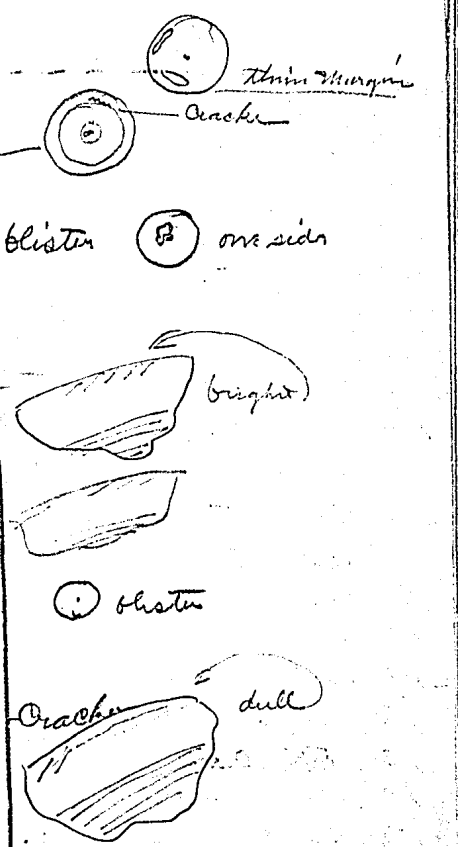
Special blank

No Blanks	Transfer	Prints	Remarks
45	OK	OK	
46	OK	OK	
47	OK	OK	
48	OK	OK	
49	Dis	—	
50	OK	OK	
51	OK	OK	
52	OK	OK	
53	OK	OK	
54	OK	Cracked	
55	OK	OK	
56	Dis	—	
57	OK	OK	
58	OK	Dis Cracked	
59	Ind	—	
60	OK	OK	*
61	Dis	—	
62	Dis	—	
63	OK	Dis Cracked	*
64	OK	OK	*
65	OK	OK	*
66	OK	OK	*
67	OK	OK	*



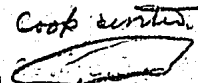
* Printed on track Moulds

No Blanks	Transfer	Prints	Remarks
68	OK	OK	*
69	Dis	—	
70	OK	OK	
71	OK	P.	
72	OK	OK	
73	Dis	—	
74	OK	OK	
75	OK	OK	
76	OK	OK	
77	OK	OK	
78	OK	OK	
79	OK	OK	
80	OK	OK	
81	OK	OK	
82	OK	OK	
83	OK	OK	
84	OK	OK	
85	OK	OK	
86	OK	OK	
87	OK	OK	
88	OK	OK	
89	OK	OK	
90	OK	OK	



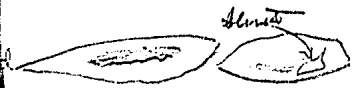
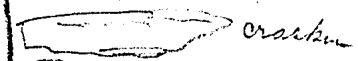
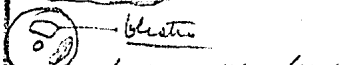
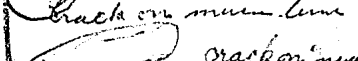
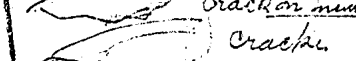
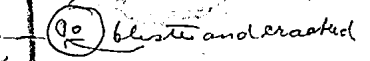
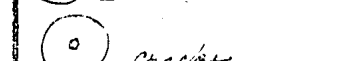
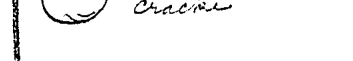
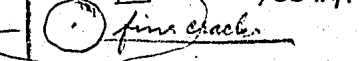
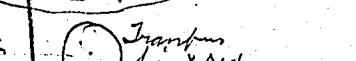
(118)

4/28/14

No blanks	Transfer	Pennick	Remarks
91	OK	OK	
92	OK	OK	
93	OK	OK	
94	OK	OK	
95	OK	OK	
96	OK	OK	
97	OK	OK	
98*	OK	OK	#632-218
99*	OK	OK	" "
100*	OK	OK	" "
101	OK	OK	" "
102	OK	OK	" " 
103	OK	OK	" "
104	Con	OK	 cracked in blister 632-218
105	OK	OK	632-218
106	to Dalley		
107	to Dalley		
108	to Dalley		V. 632-218
109	D OK	Pennick	Cook center [illegible]
110	D OK	OK	 cracker Var 632-218
111	D Dis		Cook center cracked Var. 632-218
112	D Dis		Var 632-208
113	D 2nd		" "
114	D 2nd	Dis	 cracked " "
*	tid raised quickly		

(119)

4/28/14

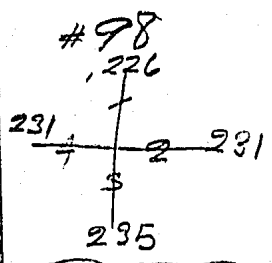
No blanks	Transfer	Pennick	
115	D dis		632-208
116	D Dis		" "
117	Dis		" "
118	Dis?	cracked	blister  " "
119	2nd		" "
120	OK	OK	 cracker " "
121	Dis		 blister " "
122	OK	OK	 Crack on inner line " "
123	OK	OK	 cracker inner " "
124	OK	OK	 Cracker " "
125	Dis		 blister and cracked
126	OK 213	OK	
127	OK 213	OK	 cracker
128	OK 213	OK	
129	OK 213	OK	blister in cracker
130	OK 213	OK	
131	Dis 213		 blisters
132	Dis 213		
133	OK 213	OK	133 right wrinkle
134	2nd 213	OK	 fine cracks
135	OK 213	OK	
136	2nd 213	OK	 Transfer front Red
137	OK 213	OK	

(120)

Special

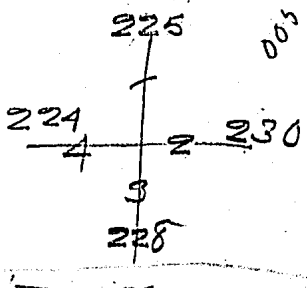
blanks #98, 99, 100
lid with rubber pad raised quickly.

#98



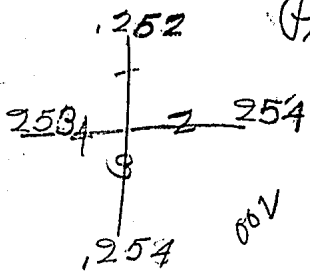
009

#99

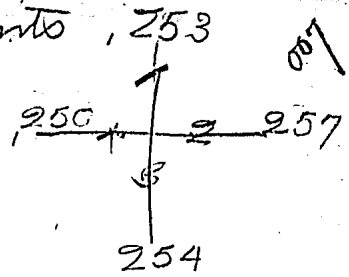


005

Printo



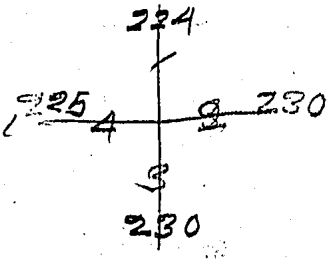
004



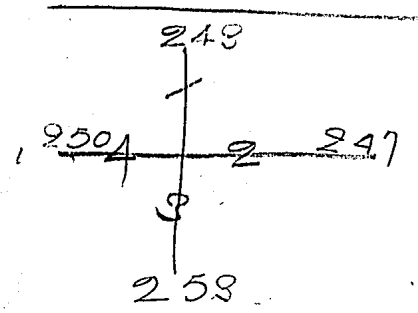
007

(12)

100



006



010

(122)

Powder test

4/29/14 at 9 am 38% humidity
" 12 PM 50% "
" 3 PM 52% "
" 9 PM 49% "

4/30/14 at 3 am 48% "
at 9 " 45% "
at 11 " 46% "
at 2 PM 65% "
" 2 30 " 55% "

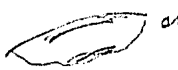
4/30/14
9/2 are mountaineering powder 50% humidity

(123)

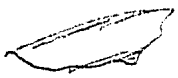
Powder test 801
Dabbing Blanks 32% humidity

(124) 1/30/14

# blanks	Examiner	Remarks
138	OK 2/3	OK
139	OK "	OK
140	OK "	OK
141	OK "	OK
142	OK "	OK
143	OK "	OK
144	OK "	OK
145	OK "	OK
146	OK "	OK
147	dis "	
148	OK "	OK
149	OK "	OK
150	OK "	OK
151	OK "	OK
152	OK "	OK
153	OK 2/3	OK
154*	OK "	OK
155	dis "	
156	OK 2/3	OK
157	OK 2/3	OK
158	OK low 2/3	OK
159	OK 2/3	OK
160	dis "	



cracked



blister and cracked

blank not blister and cracks

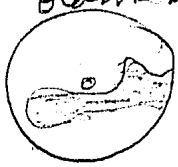
Saggy wrinkle Cracked

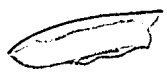
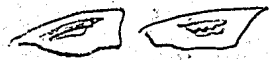
blister

(125)

blank has hard spot

104*



No Blanks	Transfer	Print	
161	OK	OK	
162	OK	OK	
163	OK	OK	 cracked
164	OK	OK	
165	Dis		 blisters and cracks
166	OK	OK	
167	Dis		 cracked
168	Dis		 cracked
169	OK	Dis	 cracked
170	OK	OK	
171	OK	OK	
172	Dis		 blisters and cracks
173	OK	OK	
174	OK	OK	
175	OK	OK	
176	OK	OK	
177	OK	OK	
178	OK	OK	
179	OK	OK	 cracked
180	OK	OK	
181	OK	OK	
182	OK	OK	
183	Dis		

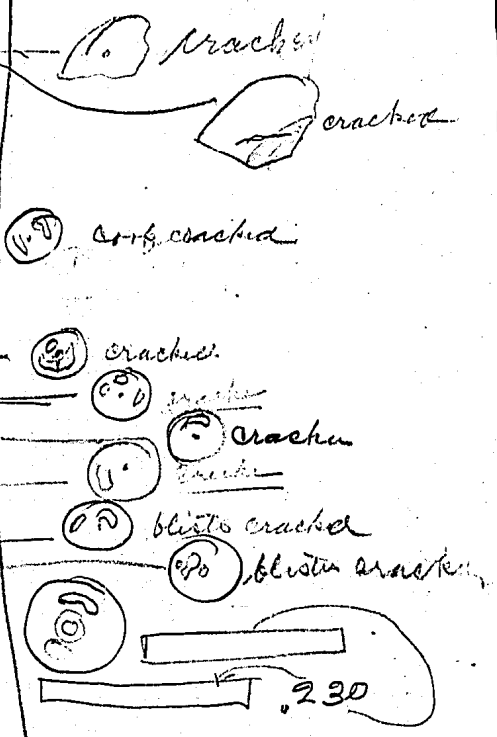
(127)

No Blanks	Transfer	Prints	
184	Dis		blister and cracks
185	OK	OK	
186	OK	OK	
187	OK	OK	
188	OK	OK	
189	OK	OK	
190	OK	OK	
191	OK	OK	
192	OK	OK	
193	OK	OK	
194	OK	OK	
195	OK	OK	
196	OK	OK	
197	OK	OK	
198	OK	OK	
199	OK	OK	
200	OK	OK	
201	OK	OK	
202	OK	OK	 blister 1/4" crack
203	OK	OK	
204	OK	OK	 cracks
205	Dis		
206	Dis		 Crack center
207	Dis		 cracked

(28)

5/1/14

Ord Bench	Temper	Painting
208	OK	OK
209	Ind	Dis
210	OK	OK
211	OK	OK
212	OK	OK
213	OK	OK
214	Dis	—
215	OK	OK
216	OK	OK
217	Dis	
218	Dis	
219	Dis	
220	Dis	
221	Dis 5/2	
222	Dis 5/2	
223	OK	OK
224 *	OK	Dis
225 *	OK	OK
226	OK	OK
227	OK	OK
228	OK	OK
229	OK	Dis.
230 *	OK	OK



(129)

No Blank	Transfer	Print	
231*	Dio		
232*	OK	Dio.	
233*	OK	OK	
234+	OK	Dio + P. Print	
235+	OK	OK	
236+	Dio		crashed
237+			
238+	OK	OK	
239+	OK	OK	
240+	OK	OK	
241+	OK	OK	
~~242+~~			
243+	Dio		crashed and crash
244+	Dio	OK	
245+	OK	OK	
246+	OK	OK	
247+	OK	OK	
248+	Dio		Worm and crash
249+	OK	OK	
250+	OK	OK	
251+	OK	OK	

Thanks Work

(130)

Fio Bomb	Transfusion	Remarks
252	OK	OK
253	OK	OK
254	OK	OK
255	OK	Dio
256	OK	OK
257	OK	
258	Dio	
259	OK	OK
260	OK	OK
261		
262		
263	OK	
264		
265	OK	Dio
266	OK	OK
267	OK	Dio
268	OK	OK
269	OK	OK
270	OK	OK
271	Dio	
272	OK	OK
273		OK
274	Dio	

P. Primi

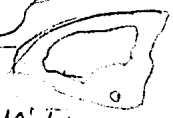
cracked

Bleste cracks

cook center

+ Night Work

(131)

No Blister	Trampe	Print	
275	Dis		 blister
276	Dis		
277	OK	Dis	 blister
278	Dis		 blister
279			
280	OK	OK	
281			
282	Dis		 blister
283	OK	OK	
284			
285	OK	Dis.	P. Print 
286	OK	OK	
287	Dis		 crack
288	Dis		 cracks and crusts
289	2nd	Dis	 
290			
291			
292			
293			
294	OK	OK	
295			
296	OK		
2			

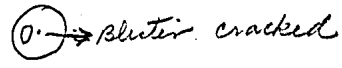
(132)

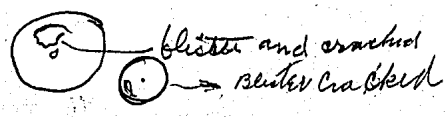
5/5/16

No Blanks	Transfer	Remarks
297	OK	
298	OK	
299	OK	
300	OK	
301	OK	
302	OK	
303	OK	
304	OK	
305	OK	
306	OK	
307	OK	
308	OK	
309	Dis	(3) Blister cracked
310	OK	
311	OK	
312	OK	
313	OK	
314	OK	
315	OK	
316	OK	
317	OK	
318	OK	
319	OK	

(133)

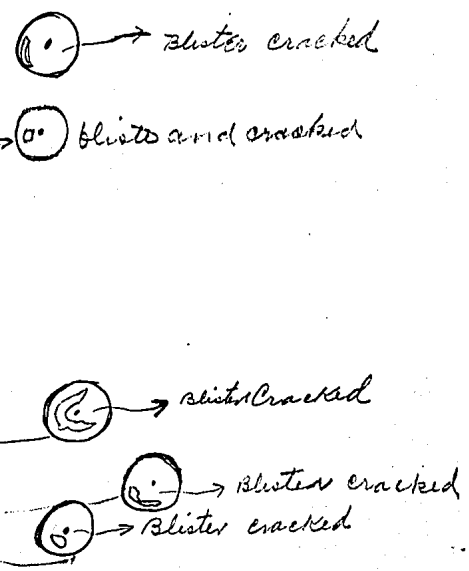
Old Blank	transfer Punch	baked Blanks
320	OK	
321		
322		
321	Dis	
322	Dis	
323	OK	
324	OK	
325	OK	
326	Dis	
327	OK	
328	OK	
329	OK	
330	OK	
331	OK	
332	OK	
333	OK	
334	OK	
335	OK	
336	OK	
337	OK	
338	OK	
339	OK	
340	Dis	
341	Dis	





(24) [1347]

N. Blanks	Examiner's Comments
342	OK
343	OK
344	OK
345	OK
346	OK
347	OK
348	Dis
349	OK
350	Dis
351	OK
352	OK
353	OK
354	OK
355	OK
356	OK
357	Dis
358	OK
359	Dis
360	Dis
361	OK
362	
363	
364	OK
365	



(125) [illegible]

366
367 OK
368
369 OK

[ITEMS(S) FOUND IN BOOK]

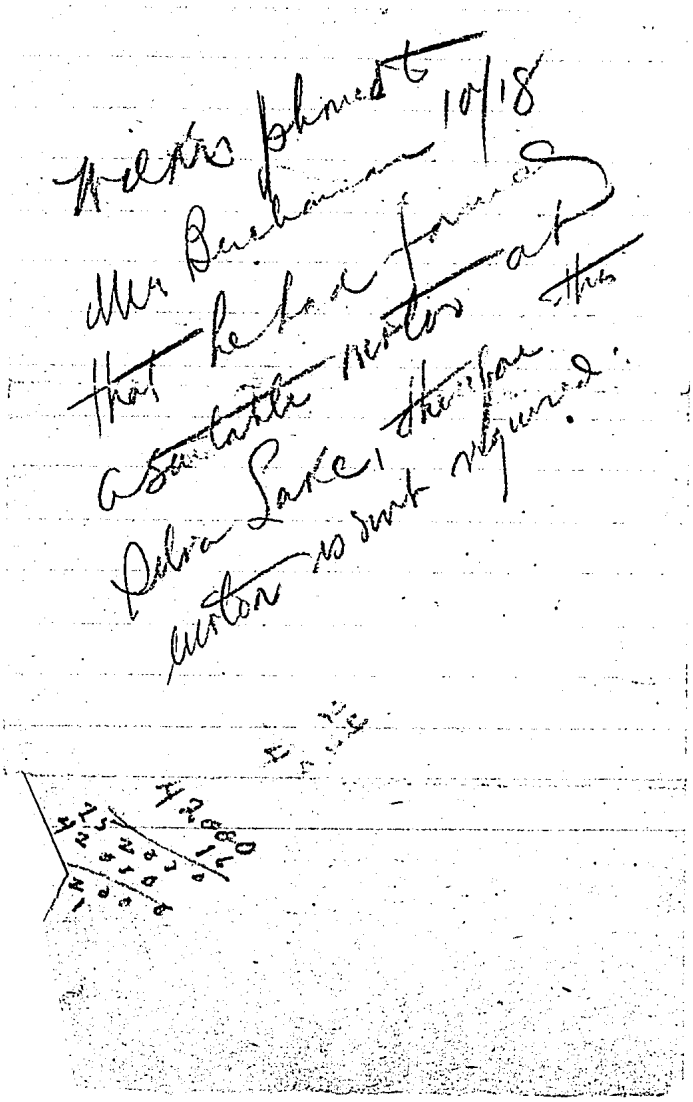
1913(?) From N-13-12-08

Paullin—

Over in store house where woodfibre is stored there is an old Dynamo belonging to me, To get it out please sign an order that it is to be shipped to J.V. Miller Edison Chem Works Silver Lake— to mixed with your stuff —

Y. ac

[ITEMS(S) FOUND IN BOOK]



[ITEMS(S) FOUND IN BOOK]

E5791-4 Version A

Comments by William A. Hayes
on notebook, N-13-12-08,
prepared for Adm. Harold G. Bowen

From N-13-12-08

N.R. Speiden
H.S. Anderson

Mr. Moore:

Experiment on Blank

8 December, 1913.

[ITEMS(S) FOUND IN BOOK]

This note book contains the recording of Mr. Thomas Edison while making experiments on the development of the original Edison disc record. It is in two parts; that dealing with the manufacture of the "blank" and that dealing with the blank surfacing on which the record was printed.

Mr. Moore, whose name is on the cover of the book was Sam Moore of Mr. Edison's "Insomnia Squad", a picture of which appears in the "Boy's Life of Edison", by Mr. Meadowcroft.

Explanatory Notes

The record, "blank" was molded from a powder whose composition was wood flower, chalk, lampblack and rosin.

The powder was made by dry mixing the woodflower, chalk and lampblack to which a wood alcohol solution of rosin was added. After further mixing this coarse mixture was vacuum dried to recover the alcohol. The coarse dry powder was then passed thru a ball mill which reduced it to a very fine dark grey flour. The flour was then ready to mold under steam heat and hydraulic pressure to form the blank which had a variable thickness of approximately one fourth inch. It was soft enough to scratch and during the printing process, which was done under higher pressure, was rendered to a thickness of approximately one-fifth inch.

The blank was surfaced with a varnish which in these experiments was first applied to a metal dish and dried. The blank was then sandwiched between two of these and heat and pressure applied. The varnish sheet in this manner was "transferred" to the blank as a veneer.

"Later the process was revised with the liquid varnish being applied directly to the blank. However, this was later than the time of these experiments.)

[ITEMS(S) FOUND IN BOOK]

The Equipment

The mixing was done in what appeared to be a bread dough mixers. They were horizontal metal containers with a horizontal spiral mixing blades driven by electric motors.

The vacumn dryers were large metal ovens, cylindrical, with a swinging door on each end and with steamheated shelves. The wet powder was placed in two-inch depth sheet steel trays which were slid onto the shelves for vacumn drying.

The molding powder was placed by hand into the demountable mold which consisted of ring bottoms with center pin-hole and pin. For loading with loose powder an additional ring was employed to retain sufficient powder.

After filling the mold by hand and striking the powder off level with retainer ring, it was placed in the first press. This was a fast ram which operated upward by air pressure against a thick rubber pad. This operation expressed much of the air from the loose powder. The retainer ring was then removed and the compressed powder struck off level with the top of the mold. A thin retainer ring and the top were then placed on the mold and the powder was ready to be formed into the blank.

The molding was done in a press consisting of an upward moving hydraulic ram with a tier of steam-heated plattens. The press mold held 12 molds.

The molding operation cycle was to first steamheat the molds, apply the pressure, chill the plattens with cold water, remove the pressure and remove the molds with the molded blanks.

After removing the blanks they were ready for the surfacing process.

Page 1. Experiment (719 Blot of Powder.)

This batch of powder was put in the dryer for the noted time and then molded into blanks under 1,000 lbs. per square inch pressure while heated by steam at 10 lbs. per square inch.

The blanks were then veneered with condensite varnish by the transfer method, using a pressure of 800 lbs. per square inch, heated with steam at 80 lbs. per square inch. This was the veneered blank ready to be printed between record molds.

The other factors in the blank processing are not recorded.

X R.O. is the abbreviation for "Run Out". It means that the music "runs out", or fades out, due to areas of light printing. X

Page II. The "Rotating disc" probably consisted of radial blades used in striking of surplus power from the mold. This type of striko-off equipment later became standard.

[ITEMS(S) FOUND IN BOOK]

Page 3: "Tapping" probably refers to the method of tapping the loose powder filled mold to consolidate the same before striking it off. This consolidating method was later abandoned for the air ram method.

"Pull Out" means that when the printing mold was separated a portion of the surface stuck to the mold and was "pulled out" from the finished record.

Page VI. "Blasts" means that the fidelity of the music was lost due to the skidding of the needle in the music groove. This was probably due to the speaker not being able to record loud music at that record speed.

To polish was to run the record under a rotary brush. This would reduce the blast as it would reduce the printing depth.

Page VII. "Knocks", "crackles" and "Scratched" and "Rough Surface", due usually to defective surfaced blank. "Run outs" and "Bad prints" usually due to blanks having low density areas.

"Cracked" - Records in process sometimes developed cracks radiating from center hole due to central circumferential stresses produced by radial flow of the record under high pressure.

Records sometimes developed circumferential cracks, near the edge. These areas later designated as "Parallel cracks" - (parallel to edge). These were due also to the radial flow of the record under pressure.

The writer determined (quite by accident in 1922) that these were caused primarilu by too high moisture in the powder which adversely affected the molding characteristics.

Page XII. The test recorded on this page does not determine whether defects arose from the printing mold or the surfaced blank. Last line reads "Rouge" (i.e. rouge polishing powder) " and I think kerosene."

[ITEMS(S) FOUND IN BOOK]

Page XIII. These are diagrams of the music groves as noted radially across the record. A "knock" is a surface defect which, if it extends across several grooves, causes the knock to repeat.

"Buckles" were wrinkles in the surface caused probably by flow of varnish under heat and pressure.

Pages XIV - XVIII. Nature of this test not understood by writer.

Page XX. Edison apparently concludes that defects in records may arise from dirt particles on printing mold and on blank. Washing mold corrects the former.

Page XXII. "Surface Velvet" good" - means absence of noise arising from scratchy surface characteristic.

Page XXIII. Blanks surfaced with celluloid instead of those preceeding which are presumed to be finished with condensite.

Page 32. "Tits on Blank" are presumed to be particles of blank varnish material extending above the surface. With sufficient heat this would soften and mold into varnish surface. With insufficient - they would cause defect in record.

"Top not in Contact with next Plate". This means that the press-rams was not operated to raise the mold to make contact with the platen above.

This test was to determine if heat alone would cause the tits to mold into the blank.

Page 33. Concludes from tests that sufficient heat reduces the hazard of printing mold defects caused by tits on blank.

Difference in mold temperatures could have arisen from location in the press or the length of time in the press. This is the thought behind Mr. Edison: "Inquire how they were taken out."

[ITEMS(S) FOUND IN BOOK]

Page 34. The "Labels" mentioned here and on previous pages were impressed in the varnish. Later, because of the high rate of defective label printing, paper labels were substituted.

Page 38. "2 Heat - 3 Contact". This is the operation schedule; heat platens 2 minutes then raise ram until contact is made with platten above where it was held for 3 additional minutes.

Page 39. Note last two lines: "Would be O.K. were it not that blanks are irregular". This indicates that the blank production method was unsatisfactory. The method used is not disclosed in this note book.

Page 41. This is the test that tried out the blank production method finally adopted.

The diagram shows the mold ring, bottom and top ring. The top steel plate and rubber pad were attached to the head of the vertically operated air ram.

Page 42. This device was tested to remove the surplus powder shown in diagram Page 41.

Page 43. This page may be clarified as follows: The thought of this experiment is to find a good way to smooth off the surplus powder after it has been compressed by the rubber pad during the ram operation and (2) to find method to prevent powder sticking to the pad at the end of the operation and (3) to get it to operate commercially and cheap.

Page 44. This shows the coordinates of a blank with marginal thickness in thousandths of an inch, as measured by micrometer callipers.

[ITEMS(S) FOUND IN BOOK]

Page 49. The fixed rotary scraper was adopted for production with the loaded mold conveyed to it on a rotating table.

Page 50. The irregular areas shown on blank diagram were areas which did not print satisfactorily. They will appear on many pages which follow. The cause was an uneven distribution of material; blank and veneer. Often areas are noted as discollorations - red especially.

The uneven distribution of material in the blank was usually caused by what were known as "Tear outs". Apparently they were not noted in these tests, altho they appear to have been present.

"Tear Outs" were areas where the scraper tore out powder below the level of the ring. When molded these produced soft spots which were unnoticeable to the eye, but which would cause Run Outs on printing. The primary cause was too rapid release of the air ram which blistered the powder in the mold prior to its being scraped.

Page 52. This is the first of blanks completed as records.

Page 53. In this case the rubber pad used in connection with the air ram was not cemented to the ram head. It was placed on and removed from the mold before and after that operation.

Page 54. First paragraph indicates the scraper had insufficient length to remove all the surplus material from the mold. Second paragraph is not intelligable.

Page 56. Start of tests using 779 varnish. Character of varnish not recorded.

Page 65. Start of tests on Lot 632 varnish. Character of varnish not recorded.

[ITEMS(S) FOUND IN BOOK]

Page 68. "It pulled up surface near edge womewhat badly". This is first indication of uneven distribution material in blank due to faulty operation at this point. Its significance seems to have escaped notice.

Page 70. - Note same, "only 2 or 3 slight raises"

Page 786 - Start of series of tests on 12 blanks (#32 - #44) from blanks thru printing.

Page 110 - Summary of same.

Page 112 - Tests on loading powder into mold by means of a straight scraper. This operation was done by hand. This was the later production method.

Page 113. Tests on processing powder in mold ready for going to presses.

Pages 116 - 125. Record of test blanks 45 - 369 thru transfer and printing.

Notebook Series -- Notebooks by Edison
Notebook, N-19-04-20.1

This undated notebook was probably used by Edison during the period 1913-1914; several of the entries were annotated in June 1926. All of the entries and notations are by Edison and pertain to the construction, electrical capacity, and efficiency of his alkaline storage batteries. Most of the entries contain data and observations, probably transcribed from earlier notebooks, regarding numbered cells made with experimental iron "pockets" or negative electrodes. Also included are notes, probably transcribed from earlier notebooks, pertaining to experiments made with various electrolyte solutions and positive electrode "tubes" and to tests made under different charge and discharge conditions. Among the earlier notebooks consulted are N-06-09-05, N-10-02-24, and N-10-10-31. The notations from 1926 consist of brief observations about specific data, along with disparaging remarks about former employee Dr. Otto Grothe. The front cover is labeled "Very Important." The pages are unnumbered. Approximately 50 pages have been used.

Iron mix-various.

5 Hour-chg 300 ma-

	#	Capac. to 300 Rate 5 Hours	qrms	Volt eff'cy	amp eff'cy	Watt eff'cy
80 Fe 15 Cu 5 Zn 5% Hg0 Non Pyro	3013	1210	5	73	80.6	58.8
O	3014	1255	5	73.9	83.6	61.7
Ditto Self heated	3015	1170	5	73.4	78	57.2
	3016	1147	5	73.5	76.5	56.2
60 Fe 40 Cd 5 Hg0 non pyrd	3023	1340	5	74	89.3	66.1
	3024	—	5	—		
60 Fe 40 Cd no Hg0 O Non Pyro	3025	1335	5	75.1	89	66.8
	3026	1297	5	75.5	86.5	65.3
80 Fe 20 Cu 5 Sn 5 Hg0 Self heated	3027	1035	5	75.1	69	51.8
	3028	1042	5	74.5	69.5	51.7
90 Fe 10 Wo 5 Hg0 non Pyro	3219	1165	5	73.2	77.6	56.8
	3220	1150	5	73.1	76.6	56
ditto Self heated	3221	1150	5	73.7	76.6	56.4
	3222	1090	5	72.6	72.6	52.7
80 Fe 15 Cu 5 Sb 5% Hg0 Self heated O	3235	1275	5	75.3	85	64
	3236	1285	5	75.3	85.6	64.5
Ditto D Non Pyro	3249	1250	5	74.5	83.5	62.2
	3250	1295	5	74.9	86.3	64.6
85 Fe 15 Wo, Yellow bronze	3269	1092	5	74.1	72.8	53.9
	3270	1150	5	74.6	76.6	57.1
90 Fe 10 Wo 5% Hg0 Dr G. non pyro	3275	1215	5	75.1	81	60.8
	3276	1125	5	75.2	81.6	61.3
85 Fe Wo 15 5% Hg0 Blue bronze Non Pyro	3281	1100	6	75	73.3	54.9
	3282	1092	6	75.1	72.8	54.6

	#	Cap	Gms	V/cy	amp/cy	watts/cy
80 Fe 15 Cu 5 Cd 5% HgO	3283	1067	5.5	75	72.5	54.3
non Pyro	3284	1087	4 net	76.6	72.5	55.6
70 Fe 30 Wo. yellow bronze	3289	1017	5	74.3	67.8	50.3
5% HgO non Pyro	3290	1097	3.5	74.9	73.1	54.7
80 Fe 15 Cu 5 Cd 5% HgO	3291	1022	5.5	76.7	68.1	52.2
self heat	3292	1040	4	76.8	69.3	53.2
80 Fe 20 Sb from oxalates	3295	1180	5	73.3	79.6	58.3
5% HgO non Pyro	3296	1175	4	72.9	78.3	57.1
80 Fe 20 Wo yellow bronze	3299	1115	5	73.7	74.3	54.7
5% HgO non Pyro	3300	1062	4	74	70.8	52.3
75 Fe 25 Wo. blue bronze	3313	1115	5	74.7	74.3	55.5
5% HgO non Pyro	3314	1045	3.75	74.5	69.6	51.8
75 Fe 25 Wo. yellow bronze	3315	1092	5	73.6	72.8	53.6
5% HgO non pyro	3316	1090	3.75	74.3	72.6	53.9
80 Fe 20 Wo. yellow bronze	3319	1080	5	74.3	72	53.5
5% HgO self heated BrG	3320	1147	4	74.5	76.5	57
75 Fe 25 Wo blue oxide BrG	3333	1030	5	74.2	68.6	50.8
5% HgO self heated	3334	1100	3.75	75	73.3	54.9
90 Fe 10 Wo 5% HgO BrG	3335	1295	5	76.2	86.5	659
	3336	1310	4.5	76.6	87.3	66.8
90 Fe 10 Wo 5% HgO	3337	1160	6	75.1	77.3	58.1
Red bronze - non pyro BrG	3338	1150	5.4	73.9	76.6	56.6
85 Fe 15 Sb. 5% HgO	3341	1195	5	74.4	79.6	59.1
Non pyro	3342	1170	4.25	74.4	78	58.1

16% NaOH

	amp/cy
3335	88.3
3336	88.8

16% NaOH.

	amp effcy
3351	81.6
3352	82
3359	80.6
3360	82.1
3369	81
3370	84.6
3377	86
3378	85
3389	85.3
3390	85
3397	89
3398	89
3321	85.5
3322	87.3

Adding up total Watt Effiecnay + dividing by the non pyro + self heated as far as now recorded gives

Watt Effy Self Heated 55.84%
" Non Pyro 57%
Amp Effy Self H 74.66
" " Non Pyro 79.

	#	Cap	grms	V effy	amp effy	watt effy
80 Fe 20 Wo blue oxide 5% Hg0 Self heat	3343	1167	5	75.9	77.5	59
	3344	1160	"	75.6	77.3	58.4
95 Fe 5 Wo blue ox 5% Hg0 Non Pyro	3349	1085	5	73.4	72.3	53
	3350	1040	4.75	73	69.3	50.6
95 Fe 5 Sb. 5% Hg0 non pyro	3351	1112	6	75.6	74.1	56
	3352	1125	5.75	75.8	75	56.9
90 % WO3 x 10 blue Self heat	3359	1097			73.1	
	3360	1110			74	
80 % 15 Cu 5% Hg0 5 Ni	3369	975	4		65	
DrG 141	3370	1172		74.2	78.1	57.9
75 % 25 WO yellow bronze 5% Hg	3375	1025			68.3	
DrG 132 Self heated	3376	1030			68.6	
% 85 WO3 x 15. Hg 5%	3377	1160		74.1	77.3	57.3
G140 Self heated.	3378	1125		74.8	75	56.1
80 % WO 20 Red bronze 5% Hg0	3387	1035			69	
G127 Self heat	3388	1050			70	
90 % WO3 x 10 %.	3389	1160		72.7	77.3	56.1
G147 5% Hg0 Self heated.	3390	1157		73.1	77.1	56.3
95 % WO 5 5% Hg0	3397	1200		73.9	80	59.1
G100 non Pyro	3398	1240		73.3	82.6	60.5
G89 Doubtful	3405	1125		75.2	75	56
95 % 5 Sb Self h	3406	995		—	66.3	sp.l
95 % WO 5 Hg 5%	3417	1175		74.6	78.3	58.4
G100 Self heat.	3418	1012				

3591-2 chgd 300 3.15 hours

× 4 hours chg at 300

⊞ 3 hours chg at 300

3475 gives (449) mah per gram
3495 ferrous Ammon Sulphate selfheated gives 286 mah per gram –

80 Fe 20 Cu non pyro 447 mah to gram

3855 Ferrous Ammon Sulfate fusion
3856 " "
3857 " "
3858 Self heat Gent 4 grms 1570
66.8 Watt Efcy
68.4

3869 - Cupric Ferrous Ammon sulfate fused
355 to grm - 68.5 Watt Efcy
selfheat Gent,

	#	Cap	Grms	V Efc	Am Efc	Watt Efc
80 Fe 20 Cu 5 Hg0	3491	1047	4	74.4	87.2	64.9
L0.14 non pyro	3492	1012		74.8	84.4	63.1
80 Fe 20 Zinc 5 Hg0	3497	1042	4	76.3	86.8	66.2
4 L0. self Heat	3498	1074		74.3	85.8	63.7
80 Fe 20 Cu 5% Hg0	3591	887	3.5	75.6	84.5	63.9
W6. non Pyro	3592	892	3.5	75.2	85	63.9
L0. 80 Fe 20 Tin – 5 Hg0 ×	3481	1007	4	75.8	83.8	63.5
4 L0. non pyro	3482	995	3.2	75.9	82.9	62.9
1 Ferrous Ammon Sulfate ⊞	3475	767	3	76.8	85.3	65.5
L0.1- non pyro	3476	770		75.6	85.6	64.7
80 Fe 20 Cu 5% Hg0	3607	952	3.5	75	90.7	68.1
W11 non pyro	3608	955		75.8	91	68.9
80 Fe 20 Cu 5% Hg0	3609	1050	4	76.2	87.5	66.7
W11 self heat	3610	1080		75.2	90	67.8
80 Fe 20 Cu 5% Hg0	3595	1245	5	73.5	83	61
W7 non pyro	3596	1275		74.1	85	63
80 Fe 20 Cu 5% Hg0	3597	1217	5	75.4	81.1	61.1
W7 self heat	3598	1197		73.8	79.8	58.9
80 Fe W0 20 5 Hg0	3659	1285	5	75.8	85.6	64.9
G10 self heat	3660	1275		75.8	85	64.4

Greater viscosity of NaOH. at 15 than KOH at 21 having same molecules shows NaOH. is very hydrated & by new Theory a better conductor.

Viscosity at 25° of KOH & NaOH.
Water = 32.6 average time

% Naoh	1st Time in seconds	2nd Time	average time in seconds	Viscosity	Specgravity
15	36.2	36	36.1	1.1074	1.166
17	37.2	37.2	37.2	1.1411	1.188
19	38.4	38.4	38.4	1.1781	1.209
21	39.6	39.8	39.7	1.2178	1.232
23	40.6	40.8	40.7	1.2484	1.254
25	42.8	42.4	42.6	1.3067	1.275
27	45	45	45	1.3804	1.290
33	61.2	61.2	61.2	1.8466	1.359
KOH					
9	32.6	32.4	32.5	0.9966	1.070
11	32.4	32.6	32.5	0.9966	1.088
13	32.6	32.8	32.7	1.0030	1.107
15	33	32.6	32.8	1.0061	1.124
17	33	33.2	33.1	1.0153	1.142
19	33.2	33.4	33.3	1.0215	1.162
21	33.8	33.6	33.7	1.0337	1.184
23	33.6	33.6	33.6	1.0307	1.204
25	34	34	34	1.0429	1.225
27	34.4	34.4	34.4	1.0552	1.247
33	35	35	35	1.0736	1.319

Capacity to 1 Volt 5 hour chg 300 MA — of 7± in NaOH

	Cth Run	V efcy	amp efcy	W atthr efcy
16% NaOH.				
2930	1380	74.6	92	68.6
2931	1350	72.9	90	65.6
3023	1345	73.6	89.6	65.9
3025	1317	72.1	87.8	63.3
3026	1310	74.5	87.3	65
3143	1272	73.7	84.8	62.5
3144	1290	74.7	86	64.2
3145	1275	74.7	85	63.5
21% NaOH.				
3195	1400	73.4	93.3	68.4
3196	1440	74.8	96.	71.8
3235	1400	73.4	93.3	68.4
3236	1387	73.3	92.5	67.8
13% NaOH.				
3213	1357	71.	90.5	64.3
3214	1360	72.4	90.6	65.6
3249	1190	72.9	79.3	57.7
3250	1250	73	83.3	60.8

Blank grids in E18 — Temperatures produced by passing 30 40 + 50 amp thru 21% KOH

30 amp rate

Temp Air	Temp Cell	amp hours	Difference
73	72.5		= 3
75	84.5	25	+ 9.5
75	94	50	19
74.5	98	75	22.5
73	101.5	100	28.5
76.5	105.2	125	28.7
78	108	150	30
80	111	175	31
80.5	112	200	31.5
80.5	114	225	33.5
		*	

*

40 + 50 about the same, but after 75 amp 50 rate goes above —

at	100	to	105
	125	"	110
	150		114
	175		116.5
	200		118
	225		120

If we charge a E18 at
30 amp then at end 225 amp it will be 12° above atmos
40 " 17.5° "
50 " 23.7 "

It is very desirable to charge at low rate for heat reasons —

E 18. Cell discha 30 amp rate
it was chgd 8 hours 30 amp.
Stood over night to cool to normal

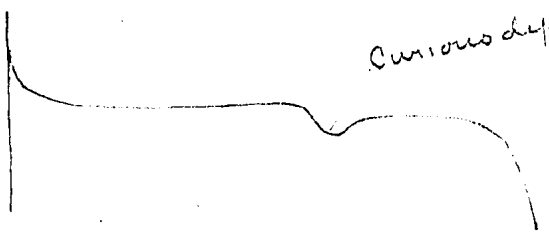
Air Temp	Cell Temp	Amp	Dif
72.5	71	0	= 1.5
71.5	74.5	25	+ 3
73	78	50	5
73.5	83	75	9.5
75	86.5	100	11.5
76.5	90	125	13.5

above cell only gave 124 amp to 1 V

F

Fe = 534 A-
Discharged at 300 ma after long charge

Normal Temp discharge	110° discha	121°	135°
1350	2575	3000	2575



Extra capacity is below 1.15 Volts

Cell No 597 Short chg

If charged normal + discharged at 135° it gives a higher capacity, + 3/100 higher voltage, than if charged + discha'd normal.

If charged at 135° + discha'd normal. capacity is only 65% of the charged normal. Voltage is less than 1.18 average against 1.27 See next page

Iron Alum, enormous quantities used in dyeing

$Fe'''(NH_4)(SO_4)_2 \cdot 12H_2O$

Colorless crystals, crystallizes readily

It is ammonia ferric sulphate

This on ignition should give very porous iron, having 12 waters

Ferrous Alum only 6 waters,

Yellowish sediment on the hard rubber of cells is a very basic iron sulphate,

Long charge

The discharging voltages in this cases are about the same

But the cell charged hot has 5% less capacity than chg + dischg normal + chg + dischg + etc.

The long charge acts entirely different from short charge. Why?

Experiments with C.P. Nickel strips, and regular irons, with, and without Lithia in the KOH.

6457	21%	2 grms LiOH each cell
6458	"	3 "
6459	"	Saturated "
6460	"	1 gram "
6461	33%	alone
6462	21%	Alone

24 hours charged - all nickel strips slightly tinted

24 hours Reversed — strip had on

6457	0.0069	7/8	second charge 33% has quite a deposit of X on all others had deposits but not so much
6458	0.0078	7/8	
6459	0.0135	7/8	
6460	0.0092	7/8	
6461	0.0200	7/8	1 grm Lithia is next to 33%. 58+57 quite small
6462	0 0080		

21% only a little as 6459 is equivalent in ions to 33% nearly it tends to shows Lithia helps to diminish X deposit.

over

Note, Brightness may be due to Mercury

6459
6461
6462 } is attacked very slowly by dilute HCl. Kept at nearly boiling heat as 6462 Clears up in the acid it resembles in appearance exactly 6459 when first taken out so all the deposits (10) 6459 6461 6462 are the same-
It certainly looks as if the deposits were partially amalgamated, This would account for the brightness of the strips + in the case of 6461 + 6462 the deposit was not sufficiently supplied with Mercury to make them bright
Another thing is slow action in HCl which may be explained by Mercury. It looks as if Lithia favors amalgamation of Nickel surfaces in Alkali + thus give loose deposits of deleterious material + loosens old deposits = 6459 after ½ hour nearly boiling is now bright, frost by rubbing slightly with finger its silver like showing that it is amalgamated hence Lithia Conduces to amalgamation + holds the Mercury in the iron + also evidently removes some scum that is not removed by KOH alone otherwise Nickel strip wouldn't amalgamate →

2nd Reverse

6457 — Very bright no gas on H Cl. grease on as H, of film clean
6458 "
6459 Brightest deposit grey. shows smaller crystals
6460 Very slight brownish deposit, not all over clear in 2 see in HCl
6461 Black heavy deposit,
6462 " " not so much as 6461

After 1 hour in acid 6461-2 still had dull grey deposit, had to polish off with rag which got black from 6461 which has more deposit on of this grey than 6462 although it looked brighter
Scarcely a sign of amalgamation, no Hg under microscope.
So far the results would indicate
1st Lithia keeps Hg on iron + prevents migration on reverse, hence iron do not go into solution on dischg + permit deposit of oxide inside Tube possibly Hg holds Co + other metals back in iron

OVER

2nd Should cell get reversed, very little Fe goes over & considerable Hg which wants to follow the Fe Any scum or film X stuff forming on Nickel tube is loosened up by tendency of Lithia to cause anodic dissolution Without Lithia Considerable iron migration & scarcely any Hg. which is the reverse when Lithia used.

Remarked that I thought Nickel was of Soluable in KOH Containing Lithia

2nd Reverse 40 hours Ni strip as cathode

6457	.0078 Fe
6458	.0037
6459	.0075
6460	.0080
no Li 6461	0360
6462	0105

Nickel strip Anode 80 hours

6457	Pink Tint Very light
6458	" in spots
6459	" "
6460	" Very light
no Li 6461	" "
6462	Blood red, deep like red Lacquer

All the colors came off instantly on dipping in water containing H_2O_2 Water appeared a little pinkish Dr G says only Trace Mn but think his test NG

3rd Chge Ni strip Cathode,

6457, 6458, 6459, 6460 } Bright, Hg precipitated

6461, 6462 } dark coating

6461 thickest coat all but 61+62 clear up bright after air oxidation, 61+62 dont clear in 5 mins All the iron grids purple When Ni strips taken out H_2O runs off as if greasy. Purple is Either Mn or Rubber Compound

Appearance of a lot of little test cells

5775 } Fe gray = Tubs light yellow brown no crystals
5776 } Fe gray – Tube Lighter color – has crystals
5777 } tint of yellow on sawed portion of rubber
Same as 5775 – tubs yellow, crystal on inside part

5778

There are 6 or 8 pages in a general note book describing condition of tubes & grids of test cells (small) too long to Copy –

Wayte rubber holding Fe or Ni a bottom is coated with mercury = Micro shows fine globules & states that it is certain there is a high resistance short circuit in many of the cells – Also many have fine Crystals on tubes & other parts – Crystals disappear when Elements put in Water.

Equivalent Ions
9% LiOH 15% NaOH 21% KOH.

38.4% RbOH. 56.25% CsOH.

Weight of Ni plate in A4–

483 Grms 1.66 lbs

Absorbtion of water by freq iron mix

Dried at 212° then
Allowed to stand in air saturated with moisture

15 min	absorbed	6 mlg
30 "	"	8
45 "	"	9
75		11
105		14
135		14
225		14
315		17

Total absorbed in 5 hours · 15 min
17 mlg 0.56%

Ferric Sulphate is the only known sulphate available in Crookes

2860 = Strip perforated, + half width of pocket used. pocket ½ filled then strip put in + other ½ mix put in — strip bent to pocket to give contact

1st Run 1290 1180 — 2nd Run 1262 1060
no gain.

3061 Neg ½ mix dampened with water
3062 so just holds together when squeezed made into Cakes 1/4" thick, pressed 300 atmos dried on hot plate ½ hour, then crushed + sieved thru 20 mesh

gives 1375 1400 but after many runs goes to 1250

Dr Grothe uses a Crookes + incompetent

3063 Dr G - 90% 10 56 5% Hg non pyro
3064

The pockets swelled terribly + busted — Strange!

3083 — No 2993
3084 —

non pyro - Ferrous Sodium sulfate 250 atmos pressure + corrugating
Heavy pressure kills it only gives 787 to Volt. after reversal improved to 1420 1232

Ferrous Ammonium sulphate fused is liable to have sulphur

3143-4 Has highest amp effy 93.4 Long Chg 1470 Short 1400 — its Ferrous Sodium Sulphate not self healed 5% Hg O + smooth press 100 at Corrugated 25 atmos

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Oxide of Cadmium in Tubes run as Fe.
Weights 10514 — 10432
50th Run 1V ½V
420 430
425 435

We now June 26 get with ½ gram pkt 1850 Neg

Cadmium metal reduced by Zinc
put in tubes with flakes & run as fo-

Weight	50 Run 1 V	½	400th Run 1 V	½
15.770	855	930	2200	3425
16.110	1160	1285	2200	3425
			2440	3790

450th Run

1 V	½
1790	3040
1740	2975
2000	3325

gives only 162 MAH per Gram

Reg Fe mix pressed into cakes at 300 Atmos. put in pockets loose-not crimped or Corrugated

50th Run		
1 Volt	½	Hot
30	75	275
60	100	275

June 1st 1926

Looks like bad contacts with pocket

Ferric ion from igniting $Fe(NO_3)$ or Magnetic oxide from the reduction of wet ferric hydroxide gives no Current at all — when not reduced.

Reg SB Co iron pockets 005 stock
Crimped only

1 V	½	
2365	3010	75 Fahr
2570	3595	
1075		35 Fahr
1700		

Loaded in 003 stock
Crimped only between flat surfaces not req die

1 V	½	
2600	3605	75 Fahr
1550	2365	
1695		35 Fahr
1090		

Iron Fe_2O_3 from Silver Lake screened thru 100 mesh reduced in hydrogen
Hydrogen replaced by Nitrogen cold.
10% H_2O - wt 8,380 - 8,670 -

1 V	½	
2880	4225	75 Fahr
2970	3970	
1930	½ 1880 mean	35 Fahr

Duplicate

1 V	½	
2630	3990	75 Fahr
2600	3990	
1780	½	35 Fahr
1360		

note ½ @ 35 Fahr

Repeat these Expmts
4 Cells for Cold test

Reg Storage bat 7 ea
8.250 grms.
Annealed, crimped + Corrugated

1	½	75 Fahr		35 Fahr
2025	2840		1440	

Annealed + Crimped only – 8500 grms

75 Fahr		35 Fahr
1 V	½	1 V
2280	3390	1665

Annealed, crimped + Corrugated
7000 grms.

75 Fahr		35 Fahr
1 V	½	1 V
1950	2850	1330

Annealed + Crimped only 7.800 grms

75 Fahr		35 Fahr
1	½	1 V
2230	3320	1655

Note, Corrugated bad cold, more than the diference at 1 Volt.

Crimped + annealed 8500 cost

75 Fahr		35 Fahr
1 V	½	1 V
2500	3885	1925

Crimped annealed + Corrugated 8.350 cost

75°		35°
1 V	½	1 V
2100	2970	1445

Annealing was done in Hydrogen at Battery Co- Crimping 15 atmos Corrugating 200 atmos

Calliper Top	middle	Bottom
112	112	109
118	116	112
101	102	100
111	110	105
119	120	116
116	117	114

We tried Dups them except all corrugated but was poor, I remark some mechanical reason Iron goes bad cold

These 45 + 35 Fahr Experiments were only made to get good Capacity Cold, But it reveals another thing + that is that Corrugating seems to be BAD

Antipassive Cobalt peroxide runs are Fe

1 V	1/2
820	990
1030	1240

50 MA Run

635	1/2
935	850
	1035

Silver plating 1/2 pockets BAD
Gold " " BAD
Copper " " No change
Cobalt " " Improved
Cadmium " " Improves
Antimony Considerably Improves
Tin No change
Bismuth No change

Ferrous Ammonium sulphate makes high efficiency irons (ignited) uls very light 3 grms to pocket.

1 Volt	1/2	
1330	1985	449 MAH To Gram
1365	1950	

Takes many runs to bring it up. This is probably due to excessive fineness

Journal Chem Soc 1889
Following relates to passivity

Most passive Nickel
Next Iron
Next Cobalt.

I remark that Cobalt plated Tubes after many hot runs were very much lower than Nickel plated Tubes
But this refers to nickel + not to Fe.

212 MAH To Gram

Pockets end loading

Wt 10.500 7 Lbs Tamp weight. Cold test

75 Fahr		42 Fahr	
1 V	½ V	1 V	½
2830	3990	2310	3520
2930	4115	2500	3630
2675	3735	2300	3395

50 Runs	100	250	500	550	½
3080	3100	2900	2090	2400	3345
3135	3150	2800	2095	2000	3040
3010	2900	2585	2360	2300	3450

10.800 grms 8 Lbs weight on Tamp

75 Fahr		42 Fahr	
1 Volt	½	1 Volt	½
2650	3700	1590	2775
2380	3400	1950	2550
2475	3535	1675	2450

181 MAH To Gram

50 Runs	100	250	500	550	½
2990	3100	2600	1900	1970	3125
2760	2760	2295	1820	1800	3160
2865	2785	2555	1925	2100	3050

Percent of loss 75° & 42°

		1 V			
75°	7 Lbs.	2812	42°	2377	84.5%
	8 Lbs	2502	42°	1838	73.4
	10 Lbs	2473	42°	2193	88.6
	14 Lbs	2410	42°	2230	92.5

More dense packing less loss of Capacity from cold,

10 Lbs wt on Tamp

10.832 Grms

75 Fahr ½		217 MAH Gram	42 Fahr ½	
2540	3600		2400	3520
2500	3550		1995	1995
2380	3400		2185	3165

50 Runs	100	250	500	550	½
3060	3120	2900	2465	2400	3630
2965	2880	2800	2100	2400	3375
2900	2860	2520	2150	2260	3265

11.500 Grms 14 Lb wt

75 Fahr			42 Fahr	
1 V	½	197 MAH Gram	1 V	½
2300	3300		2190	3150
2450	3475		2305	3400
2480	3450		2195	3180

50 Runs	100	250	500	550	½
2815	2820	2800	2385	2300	3270
3075	2965	2800	2260	2400	3275
3075	2955	2875	2100	2080	3100

From this 7 lb wt at end of 550 runs gives same capacity as 14 Lb wt.

7 Lbs	8	10	14
217 MAH Gram	181 per Gram	217	197

Scarcely any diference to ½ Volt.

Ignited 80 Fe 20 Copper 5% HgO
3.59 per pocket 410 MAH per Gram
Dup gives 447 MAH per Gram
@ 68% watt efficiency-

After Tabulating 20 Bismuth cells
I remark Irons go bad to a volt in
Bismuth cells but OK to ½ volt
Irons gives good hot capacity which
falls on cold running

Plating Fe pockets with Cobalt &
probably good, plate thick.

Bismuth Potassium Thiosulphate is a
precipitate in KOH not in NaOH.

Metantimoniate of Potash gives a white
precipitate of Metantimoniate of Sodium
Even diluted $\frac{1}{1000}$.

All distilled water contains Ammonia

Potassium Stearate is soluable in 21% KOH
but very slightly in KOH saturated with Lithia

Nickel strips ½ inch apart in small cell
with 1 amp Cell having 90 cc
Following % of KOH

15% KOH	2 hours	10.3 Degrees Fah.
17		10.6
19		11.5
21		11.3
23		12.5
25		10.9
27		10.6
		11.57

With same %'s of KOH. but with 2 gm LiOH
in each cell

15%	11.0 degrees
17	9.7
19	11.2
21	10.9
23	10.9
25	11.9
27	10.1
	10.81

Short charge A cell 597-
Charged normal discharged 135° fahr
gives higher capacity & 3/100 higher
Volts than if charged and discharged normal

If charged at 135° fahr and discharged normal
capacity is only 65% if charged normal
& voltage instead of 1.27 is down to 1.18

Long charge

Discharge voltage in this case is about
the same. But cells charged hot has
5% less capacity, than when charged
and discharged normal. and charged &
discharged hot
The long charge acts entirely different
from the short charge.
WHY ??

Rzq Tubes Bi LiOH group.

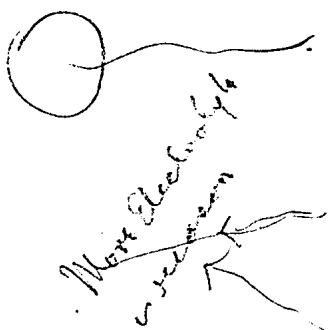
Charged cold discharged Hot
Capacity + Volts good 1280 ma.

Charged Hot, discharged cold 500 MA

Charged Hot discharged Hot 900 ma

Evidently charging hot bad for Bi

Some Bi cells are fair when chgd +
discharged Hot. 1200 on a 1350 MA Tube



I say Fe is not affected like the Nickel in charging Hot

Plain nickel in 21% KOH alone, gives 1/3 of its capacity, on charging Hot 130 fahr gives 1/2 capacity when KOH has the 2 grms LiOH in it

With 21% KOH 2 LiOH. Bismuth gives 3/4 of capacity

Regeneration of bad irons from a big Cell. using one Fe pocket with 4 Ni Tubes in small can, Tried 10 cells. I say that the irons dont really go bad, Think it goes passive from want of use

The average of the 10 irons when we

Started was	896
8th run	2289
15 "	2540
16 " after full charge and shortcircuited 3 times was	3047

Evidently most irons can be brought back to capacity by fully charging and short circuiting, and repeating this several times! —

Iron in pockets gives different capacities if pockets plated with different metals, Antimony seems to be the best. A tube with Fe + flake Ni was no good, it may be nickel acts Catalytically + kills iron,

3057 #69 Dr Grothe
3058

60% Fe
40% Cadmium } 5 grams
5% Hg0

Charging Voltage only 1,65 ??
Watt efficiency 61%
Amp " 80%
. 1200 ma To Volt,
Peculiarity is the low charging Voltage

90 Fe 10 Sb Split pkts busted 3063-4
95 Fe 5 Sb " " 3405-6
Both had 5% Hg0 -

3829-3830 80 Fe 20 Antimony. 5% Hg0
Self heated gives 1420 ½ 1850
1420 1775
nearly 400 MA per Gram

Lots of 80 Fe 20 Sb went all kinds of ways 100 ma To 1400

WHY → Dr Grothe a fraud and charmer

Fe from ferrous sodium sulphate
gives highest efficiency yet.
5 grms

Long chg 1470
Short chg 1400

3143-4 93.4% Amp efficiency
Takes Several runs to bring it up.

4584
4585
4586
} Bismuth in the iron

goes bad after 100 Runs

	Cold	150 F
5% Bismuth	590	15
10% "	1175	25
15%	2140	15

Note = 5 Gram pockets 4587-8
Iron Oxide mixed with 10% Metallic Antimony
reduced to fine powder by Hydrogen
Containing No Hgo. run with 4 Ni Tubes
50th Run

1800
1710
1700
} to Volt.

4782-3-4 pockets not nickel plated
8.192 weight of mix

50 Run	400 run
2165	1700
2260	2035
2340	1850

Duplicate plated with Nickel

50 Run	400 Run
2500	2600
2260	2200
2500	2500

Nos 4779-80-1 8.192 wt.

This shows even Nickel is better than no plating at all—

5 Gram cakes - Req Fa.

	50 Rem IV	½
No Hg O.	1255 1535	1740 2200
2% Hg O	1540 1495	2165 2255
4%	1720 1630	2570 2460
6%	1790 1665	2665 2480
8%	1575 1553	2365 2255
10%	1740 1765	2590 2630
12%	1700 1795	2690 2710
14%	1800 1730	2640 2565
16%	1775 1525	2690 2360

Rzq Fz 6% Hq 5 Gram Cakes 150 Run

		1 Volt	½
All fines thru	20	1570 1640 2 | 3210 1605	2320 2545 2 | 4865 2432
"	30	1800 1800	
"	40	1845 1450 2 | 3295 1647 1647	2730 2370 2 | 5100 2550
"	60	1575 1765 2 | 3340 1670 1670	2500 2510
"	80	1775 1675 2 | 3450 1725 1725	2620 2525 2 | 5145 2572½
"	100	1890 1755 2 | 3645 1822 1822	2750 2530 2 | 5280 2640 2640
"	180	1465 1285 2 | 2750 1375 1375	2095 1885 2 | 3980 1990

Regular Fz thru different seives

			50 Run	150 Run
30 on 40	average	1075	950 1200 2 | 2150 1075	
40 on 50	"	1380	1400 1360 2 | 2760 1380	
50 on 60	"	1372	1400 1345 2 | 2745 1372	
60 on 70	"	1572	1530 1615 2 | 3145 1572	
70 on 80	"	1295	1250 1310 2 | 2590 1295	
100 on 180	"	1880	1860 2 | 3760 1900 1880	1640 1560
Thru 180	—av	1705	1770 1640 2 | 3410 1705	1480 1530

Irons when run in cold temp, bad, no matter how much the weight of the tamp is increased. 2½ lbs or 4.88 lbs.

Think solvent action of the Hg Causes Fe To get more dense & Shrinks away from contacts Look like meld the dense iron under micro,

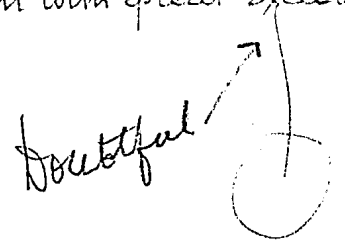
Hypophosphites of Soda seem to heat irons -

Reg Fe wt 3 grms heated to 212 for hr lost 3/10 of 1% — This sample exposed to air & saturated with moisture absorbed as follows

15 Min	6 Milgms
30	8
45	9
75	11
105	14
135	14
225	14
315	17

It appears that we cannot use Iron as a negative of Bismuth as it is to be used in Ni Tubes, perhaps Cadmium or Cobalt may do, -

It is probable that in big cell Nic Fe loses capacity as fast as Ni increases & we get no gain like we do in little cell with great excess of Fe.



Shows how Bad our little tube test is —

This belongs to Nickel Boat

Long Tubes

	25% KOH. 2 Li cold	25	50	100	200	½
Run Cold	1690	1792	1747	1774	1655	1787
" Hot	1700	1599	1701	1674	1401	1646

200 Run

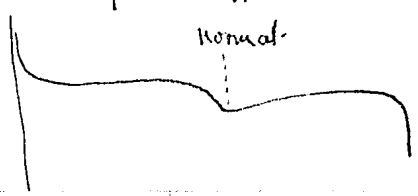
Cold	1561	3 Li 25 KOH
Hot	1247	
Cold	1653	33 KOH 1 Li
Hot	1595	
Cold	1595	
Hot	1239	33% KOH 2 Li OH.
Cold	1532	21 KOH 50 Mg Li
Hot	1340	
Cold	1729	21 K 100 Mg Li
Hot	1274	

Cold	1764	}	21K 200 milg Light.
Hot	1440		
Cold	1428	}	21K 400 milg Light
Hot.	1436		
Cold	1497	}	21K 700 milg Light.
Hot	1382		

Copper mixed with iron, leaches out on hot test and iron nearly loses all its capacity
When reversed if its not reversed it loses very little capacity

A 5 gram Fe gave 1480 Chg-dischg Normal ie 15 hours 400 dischg 300

Same iron chgd & dischgd 110° Fahr gave 2550 to V iron has a drop where its falls off normal



Reg Test Fe taken out of test cells after going Bad & after 250 Runs Went bad from lack of use, from Cells 1630 1639
Average of ten They are reg Storage B Irons

Run →	V 896 ←	1/2 →	
8th	2289	3516	before coming out of cells
15	2540	3796	
16	3047	4658	
17	3137	4709	
18	2936	4431	

Notebook Series -- Notebooks by Edison
Notebook, N-14-01-01.1

This notebook was used by Edison, probably during the period January-August 1914, and was annotated by him on several subsequent occasions, including January 1, 1916. It consists primarily of notes from the numbered battery record books (*Thomas A. Edison Papers: A Selective Microfilm Edition, Part IV*, Notebooks by Edison and Other Experimenters—Battery Record Books) and other earlier notebooks pertaining to alkaline storage batteries. Included are data and observations regarding the capacity and efficiency of numbered experimental cells. Many of the entries relate to the composition, construction, and treatment of positive electrode "tubes" made with nickel and other metallic flake (including cobalt and bismuth flake) or treated with other metallic additives. Other entries pertain to negative electrode "pockets" made with different preparations of iron, to the use of different electrolyte solutions, and to the possible rejuvenation or "regeneration" of used battery components. Inserted into the book are several loose pages of notes, including a 1910 memorandum from Walter E. Holland to Edison regarding the construction of three experimental cells. The front cover is labeled "Very Important." The pages are unnumbered. Approximately 130 pages have been used.

Arsenate of Hg is sol in KOH

I think Arsenic metal is reduced to Metallic if so is there local action, or what—

Cant Formate K formed in our cell in presence of CO_2

Hurts Know – all cyanide Compounds hurt iron, ...
Why – Ferrocy Fe decomposed by KOH.
Is it Shuttle Ox & Red

Notes Old Green – 1907

Iodides in electrolyte very bad for Nickel reduces capacity more than half.

Arsenic Acid is bad for Cell. Arsenate or Arsenite, diminishes Capacity 20 @ 25% 100th run in small test cell—

Formate K is bad, reduces capacity 20 @ 25% 100 Runs.

Tried
2 grms KBr
2 " KCl
2 " NaCl.
2 " NaBr
} 100th Run 25% lower than regular

4 Na Sulfide 100 Run OK
2 Na Sulfide 2 KCl 100 OK

4 grms KCl 50th run 40% lower capacity
2 ferrocyanide K ..

5 grms K Benzoate OK 100
5 " K B. fluor. del K 100 Runs

Saponin

5 grms K Binoxalate OK 100 Run
5 " K Bisulfite OK "
5 " Borax - 6% better "
5 " K Bromate OK "
5 " K Hypophosphite 20% " lower
5 " Duplicate OK "
5 " Lactate K OK "
5 " K Nitrate OK "
5 " K Nitrite OK "
5 " K Orthophosphate OK "
5 " Realgar wouldent run at all, had to empty and put in fresh KOH 21% show 45% loss of Capacity. Iron was badly injured Nickel not at all-

.5 grms Ethylsulphuric K - OK - 50th run, it foamed terribly -

5 grms K Silicofluoride OK 50 Run
5 " formaldehyde - OK 50 "

Cobalt peroxide made by Bromine 5.27 grms only gave 18% of Capacity that Nickel does

Iodide Hg Cyanide Hg sol — KOH

Succinate Hg Sol KOH
Acts like sulphur

5 grms	K Cinnamate	OK	50 runs
5 "	K Cyanate,	Irons badly hurt	
5 "	K Iodate	Nickel badly hurt.	
5 "	K Nitrobenzoate.	Iron badly hurt-Nickel OK	
5 "	Acetamide	20% loss	
5 "	Flour Sulphur	40% loss-Too great an excess	
5 "	K Selenate	10% Loss	50 Runs
5 "	Metastanate K	OK	"
5 "	Sulfosuccinate K	OK	"
5 "	K Succinate	OK	"
5 "	K Tellurate	20% loss	"
5 "	Hard rubber shavings	OK	"
5 "	Magnesium powder	OK	100
5 "	Cadmium "	OK	50
5 "	Lead "	OK	50
2 "	paper	OK	100
2 "	Na Sulphite	OK	150
4 "	"	OK	150
2 "	Na Sulphate	OK	150

Experiments when we were using mostly Co flake shows that when Ni flake was used it was 10 to 15% lower capacity.

Damp $Ni(OH)_2$ makes heavy loading weight

Selenium acts like sulphur

No question of conductivity comes in higher capacity due to more ions in pores to do the work.

500 Milg Sulphide Antimony . 25% loss capacity
" " Selenium. 60% loss " 100

With Tubes we use now
2 grms LiOH 27% KOH.

11	25	" +44	1360	50th run
"	23	" +41	1316	"
"	21	" 54	1275	"
"	19	" +9	1221	"
"	17	" +29	1212	"
"	15	" +23	1183	"
"	13	" —	1139 Bad	"
"	11	" +32	1161	"
	9	+20	1129	"
			1109	"

1907

3 | 25' / 54

1907 says this shows charging rate is bad, and Cobalt flake is much worse than Ni flake.

Iron is not active at low temps. requires like Carbon a certain heat when in a certain physical state to make it reeact rapidly. Only way out is to get more porous + finely divided irons + keep down Hg or abandon it, + increase discharg rate for heavy work by increased surface —

A 5 gram Iron pocket giving 1480 to a volt
Charged + dischgd Normal, 15 hours 400 Dischg 300
Same 7z charged + dischgd hot 110 Fahr
gave 2550 To a Volt, Why?

We never gave Caesium or Rubidium hydrate a good test.

Ni Tubes never plated always went bad on hot test, - See further on claiming this

Ni tubes run in saturated LiOH get a very red coating on tubes cant be rubbed off. Ogna Regia takes it off an quick in transparent sheets having a reddish stain After 50 runs irons + grids bright, alloy yellow different from Reg tubes, This is on discharge, but after 100 runs a Brown red strongly adherent to tubes This is 6059. Electrolyte being 21% KOH Saturated with LiOH.
6059 is put in test tube with 100 cc water + 100 mlg HCl for several hours over asbestos

possibly gelatinous Ferric colloid

on hot plate, in few minutes clinging red wipes off, dont think it dissolves but HCl dissolved off something that made it loose

Aluminum is bad in KOH NaOH, Worst of all,

3 grams of ferrous hydroxide put into Elektrolyte 21 KOH 2 LiOH 150 Runs actually increased the Capacity a little,

Why ?

→ Acetone is bad

NaBr seems to help Irons
300 Mlg Bromstone in Electrolyte 21K 2Li seems to increase capacity of the Irons
Can it correct passivity ?

Nitrates are bad either for Iron or Ni

Carbonates K dont hurt I even seems to help - when KOH, but hurts in NaOH. when it Na Carbonate, 15% NaOH 2Li

Hydroxides like Fe + heavy plates Index

Reg cells, 5 time normal boosts 6 months dont hurt in normal Electrolyte but hurts bad when weak ? why Extra heat possibly

Must Expand greatly in length.

We should Precip Ni by LiOH+ace
if Li is washed free or is there a Combination

Perhaps the gas which comes off on
putting in acid is air in the pores

2% Water

Many count
26.9 KOH

A saturated Solution of LiOH in
water causes Tube to be Twisted
Cork Screw like and bent.
$Ni(OH)_2$ must be an acid & Li forms a salt
with it hence enormous swelling
June 1907

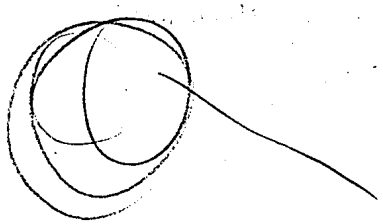
$Ni(OH)_2$ absorbs water from the air
There is always some NaOH left in it
also Carbonated

Took 10 grms green from drum
Threw 20 times in - put on Watch
glass, in two hours on hot plate
on a piece of paper Lost 85 Milg
in air Gold regained 191 Milg

Ni flake thru hydrogen is no good
must be elastic + not dead to make
Contact with Walls of Tube

5 grams Lithium Chl 21 KOH better
than 21 K 2 LiOH.

Bismuth is not good. except with LiOH.
only gives mg +



This seems to show porosity is not Enough as Ni does not get enough ions to give capacity

Phosphate Lithia is insol as KOH.

Evidently Li displaces Ba in the Electrolyte

Another Case where Phosphoric Compounds are bad.

Phos bad

& Carbonates with Ni Oxide from KOH

There are Cases where Phosphorus does no harm

Green soaked in Titanium Sol 21K OK
" Zirconium " " OK
" Nitrate Didymium " OK
when LiOH put in it reduced capacity
Green soaked in 4% Bichr. increased " slightly another piece further on says Bad,

Pure Ni Tubes. Ni rings Ni wire -

100 Runs 1160, 1140, 1147 } 21% 1263, 1263, 1260 } 21 2 LiOH.

1360, 1353, 1353 } 25 2 LiOH. 1433, 1433, 1433 } 27 3 LiOH.

End Book No 4

Book 5 Soaked Green in Orthoplas LiOH precip by

Potash then in Chl Ba — without LiOH gave 987 with LiOH 2 470 —

Soaked KSO4 then Sr Cl — gave 1219 + with 2 LiOH. 1240 —

Antimoniate K + Ba Cl. 843 — with LiOH 1042
Conc Stannate Soda + Ba Cl. 1214 with LiOH. 1258

Nickel may be a compound
Yes here is a method of separating
the two, or something in $Ni(OH)_2$
Used Combines with LiOH,

It is remarked here that acid treatment of flake removes Al_2O_3 & Fe,
Rzg Ni along here with 2 LiOH. was giving
1330 often 25 hot runs
. End book 5 #8000 group

Book 6 = #7450 group

Sr Carbonate precip in pores 300 Rum 1133 - with LiOH 150 Rum 965
Ba Carbonate " 300 Rum 1080 " 150 R. 1038
Boiling green in Conc $HgCl_2$ washing acet free show sponge loss capacity after 150 Rums
Especially when LiOH is used —
Without LiOH lost 70 in ah 150 rum
with LiOH lost 250 — another Dup —
Without LiOH, Lost 159 — with LiOH, 267 —
This is strange —
Alcohol saturated with $HgCl_2$, + then washed free much poorer capacity when LiOH used —

Soaked green in Conc $Ni(OH)_2$ in Ammonia + NH_4Cl. boiled with KOH, washed well.
150 Rum no loss capacity. It was Cut out 1150 —

No def when strontia used

KOH decomposes Chromium as known to make Irons good

Possibly closed pores so not enough ions to react,

Another Case where phos combines to dead the Lithia in KOH. We shall have to test for a while for phosphate —

Bismuth — 10 min soak 1/2 strength Conc $BiCl_3$ Nitrate left all night 10% KOH. Then boiled + washed free of Cl. 6.41 wt —

Cold	50	150	200	
1033	1120	1120	1077	Co
1155°	1450	1239	1176 —	Iron 1290 — Li Off in this

Another with Bi made nearly same went to 1367 on 100 + then bad —
Another where tubes soaked went from 1130 to 1380 on 100 + then went bad - 990 —

(green soaked BaCl KSCN — No LiOH, better than with LiOH —

Soaked BaCl + Chromate K — Irons go bad —

Soaked Green in KMnO + BaCl, only gave 580@640 - Cold — bad —

Orthophos K + BaCl — no Li 50 Run 990 but with LiOH 467 — Note bad effect of phosph on LiOH.

We were Oxdzg flake at this time —

Evidently Li dont Combine or displace CO_2 from Lime,

not oxidzd now —
Another Case cobalt phos in green effected the LiOH a it went bad

8731 group RA 1072 at end 200 Runs 200 higher than the Dup in LiOH —

When mg CO_3 a others are precip in pores of green The LiOH dups are much worse than Reg 21 KOH, with phos lime Capacity about same K7 a Ca(OH)$_2$ same capacity

Green soaked in Conc $BiCl_3$ in Acetone LiOH — which seems necessary for Bi

Cal	25	50	100	150	200
" 1062	1380	1394	1360	1347	1280

Bismuth 5

Little Mercury precipitated in the pores
No LiOH. 150 Run 1106 — with LiOH. 1335.
350th Run 1237 / 1084 } 400 - 997 / 990 } put in new 7s
1230 / 1287. 500th Run 1219 / 1297 } -

Gather Bi in this Examine Phos in book

5 grm virons — Def 1% Hg Highest
50 Hot Runs

	750 rate	300 Rate
2% Hg	425	1545
3%	1037	1720
4%	962	1665
5%	850	1610
6%	987	1630
7%	837	1600
8%	900	1560
9%	962	1600
10%	950	1560

Last 1/2 Hr

See Ironbook worked from Coast
for connection —

	750 rate	300 rate
250th run	1495	795
2		
3	280	1100
4	212	1065
5	612	1100
6	462	1075
7	406	1070
8	542	1005
9	375	1005
10	480	922

Ni flake treated with $BiCl_3$ NH_4Cl reduced Bi on flake, steel Colo washed with Ammonia Chloride

#478	Cold	100	200	250	350	500
	1220	1420	1480	1420	1520	1270

650 changed 7z did no good — 1263 1200 1417

Tried almost every organic on the Roth,
Cresol Bad Very
Trichlorophenol Bad
Salicylic acid Bad
Picric acid Bad
Resorcin Bad
Methyl Alcohol bad
Formaldehyde Bad
Benzidine —
Hg Salts of Three Acid on Roth 2 Hr

#571 — 16.8 Bi —	50	150	300	400	550	
	1430	1440	1450	1260	1340	
600 + new 7z	650	700				
1490	1570	1557 —				

Noted that after a long run without Roth. if virons are changed it goes bad whereas if Bi is present + Li I remark that nacl 7z gives out something that hurts tube

Li Off Bi flake

Phosphotungstic Acid — NOTE
Electrolyte gives high hot runs
1363 to V 1510 ½ Volt + 1453 Hot

Phosphomolybdate K High hot
2 + 4 grms — but only
gives .387 to Volt Cold + 1003 hot

2 phos Molybdate — no Li Off
367 60, Ref 387 Hot.

Antimonate K .600 } 1 volt 50 cc Rem
+ 1190 to V Hot 897 } 2 Li Off.

Bi flake —

Another Dup #1654 2 grms
Phosphotungstate K — 1373 to V 1267
2 Li

Note this, It was Antimony in Fe
Heat gave such abnormal high
Capacity but very capricious
Its a reagent for K & Chink

Ru 2 cases with Ref Bi tubes running
550 times hot ½ V was 1640 + 1 V. 1230
but when Fan changed 1 V was 1440 +
½ V 1550.

Note that Low Li Off is Great for
Bismuth for a long run — #1172
But mark it Doubtful, Hopper Made
Mistake —

Acetanilide Very bad 50 runs
Picric acid " "
Dinitrotoluol " "
Triacetylhydroquinone Bad " Benzoylacetone Bad

" Sulphomolybdate K 50 Run Zero

#1948 to here Book 10

Get the Fe books

Make Notes —

Especially Antimony

Iron

In Book 13 notice, good effect of changing iron.

200th Run	changed iron on	250th Run
1270		1413
1283		1540
1263		1473
on even 400th Run was		1293
		1267
		1300 —

This shows or appears to show we dont have enough iron

With 36 mlg green to 4.2 flake

200th Run		Changed Fe 250 Run
	1330	1437
	1223	1433
	1330	1433

With 48 green 4.5 flake to dump

200th Run —	Changed Fe 250 Run
1390	1463
1320	1480
1420	1477

But there were 3 cases where changing Iron. didnt do any good on same pages →

#579 16 8% Bi Run from 21K4L.1Th 1/4 rate
4.00, then 21K2L

50	100	150	200	250	300	350
1446	1430	1446	1305	1447	1492	1337
400	450	500	550	600	650	700
1365	1443	1506	1356	1493	1525	1556

Smaller chgd + dischgd twice in 21K8L.1Th 1/4 rate then changed to 21K2L at 700th Run gave 1536

I note Run - Changing from unpressed Bismuth tubes on 1st 2nd & 3rd runs & Half run capacity which falls 33% on 1st Charge comes back — Thus is not as with Non Bismuth — They unpress on 1st run & then they grow bad as of iron gave out something bad.

I test Phosphorous or Al or Vanadium or Tantalum with Uranium Aluminum

Or don't build up after original Hydrogen made iron is oxidized

A soaked Bi green gave 1314 50th run then run along thus

100	150	350	450	500	550
1250	1380	1450	1230	1250	1010

Changed to 600 650
1170 1335

Green mixed with Oxide Bismuth 10%

Cold	50	100	150	250
1083	1450	1445	1533	1587
350	450			
1615	1550	remarked 1164 too heavy		

Book 14

Exposing green for 2 weeks did no harm —

~~out the loading~~

Connected 2 gram Tri to Each Tube —
ditto 2 gram B 2 Tri
ditto " Pb & 2 B.
ditto " arsenic only
Did neither good or Bad

Cd tube

Tube filled with 1/8" of each end, the ends filled and 5 ohm went bad only 967 milliamp heavy — flake & green gat Chance to expand & get at contact.

Guess loading wt changes & its liable burst tube from water lubricating & making dense & too much load wt —

Dried Alumina seems to do not harm but undried precipitated Aluminum precipitated in Electrolyte is very Bad —

This seems true for Silica —

Drying Changes both or makes them inert, non colloids

probably true of Zr & Ar & Ti its only when not dried they are bad,

Because dried

Silica precip in green 2/10 lt. / did no harm Even 1% no harm Neither ded 1% Alumina but green it decolored out, or dried

1/2% Co precip in green showed improvement, 1% decided improvement, 350 mm 1410 –

2 grams Silicon connected Each Tube Went bad only 480

Bi & Si dello. —

Cr 2 gms went a little bad

Vanadium is Bad for cells

Neither Zr or Arsenic precip in green in small quantity is bad — or Ti

1164 green is heavy green —
Mixed 20% Carbydrous B. with it

Cold	50	100	150	250
1260	1530	1720	1747	1555 Co -

Burnt 3 places —

30% B. Oxide only dident do as well
50% " " Much worse

Another 20% B.O only 500 Rum 1415
it showed with a 30% B.O only
1887 to 1/2 Volt after 200 Rum
but only 1267 to .9 - 72 Good 9
guess

Effect of decreasing Metallic Aluminum

	100 Rum
4 Milgm -	1230
3 "	1230
9 "	1232
2 "	1125
8/1 "	1062

20 Mlg - 175 cc
21 p Heat 2 hr -
appears OK

This apparently Bi_2O_3 does not conduct as $Ni(OH)_2$ alone without flake gives 200 Matt—
What does it do

Green mixed with 16.8 Bi put in tube without flake
50th Run 103 Matt

2 grms Tellurium Connected Each tube, not good—

ditto 7% Va alloy—Very bad 610

734 green 16.8 Bi — 1st 2 charges in 8% LiOH, 1/4 rate. Then changed to 21K 2Li—

500 Run	800 run	1050 run
1487	1524	1577
1250	1300	Bad Cont.
1423	1333	

Another one charged 4 days loose in 4% LiOH/rack then put in 21K 2Li grms about the same

5.145 / 7600 - / 1477 — 1477

5.145 mg ℓ Mach

2 lb cowright lamp	1477		1073	5521
2½		5.351	1103	5902
3			1050	6027
4	1347	5.641	1123	6333
4½		5.510	1157	6399
5		5.390	1193	6.445

2 lb cowright lamp Copenhagen flat grain

End book 15

filing down burrs
Making mist
Lime Carb mixed in green
unpowdered form does not
harm — used powdered
Marble

It certainly is curious, we have much to learn about the iron

Possibly Ni plating is not good see 3 pages ahead where iron plated iron gives good results.

(Perhaps Ni has some bad action on Sty. Try iron plated tube without flake - with flake without Hg (Calgon))

Celluloid dissolves in KOH.

Iron pipe nipples 10 gms only gave 2100 Mach No flake —

with flake went to 250 Mach on 200th run coherent without flake 1230 —

This is Curious

Bi dont work without KOH 100th Run

No Bi	933
1/0 Bi	1380
2/0	1533

Took piece film Celluloid folded it in tube & Loaded it

Didnt do any harm 5/1 950 Mach 1000 on 250th Run

Bi in NaOH & various LiOH not near as good as KOH,

5 gram Coke Req for complete Neut - But with

	Cold	100 Rev	Neut
5% Bi in Fe	590	45	1510
10%	1175	85	1260
15%	2130	85	1260

Note

This goes to show that Bi dissolves in KOH & is reduced by the iron, or lowers its voltage so it can't reduce the nickel but when heated its voltage is increased or the Bi is oxdized & no longer interferes

Tantalum is now known to act as a Valve like Al in rectifier & more strongly -

Tantalum Rod - 1 gram connected to tube

2 gram Aluminum Metal Connected to tube Gold 1093 - 50 Rev no Capacity at all

Thus must effect the iron

NO_3 Oxidizes Fe_2 & themselves are inactive hydrate probably?

It may be that Ni acts catalytically in both & is used both for Ni tubes & Iron tubes — Can Tongue 2 cells one Ni plating on tubes pockets & grids only the poles plated

Have got exposures Nickel goes back from Incandescence OK

It may form iodate film or Combination with $Ni(OH)_2$

Dolezalek finds what Forbes does

Has soluble Si Can act

20% Bi tubes —

2 grms K Nitrate in Cell

Very Bad 587 on 50th Rem Great gave 1623 to ½ volt,

2 grms Na Nitrate only 400 to .9 + 1683 to ½ volt, Aluminate Na hints some

Reg Ni Reg tubes Not plated

gives 1258 300 Rem 1190 500 Rem

600 rem 1073 — See note back

2 grms Iodide K —

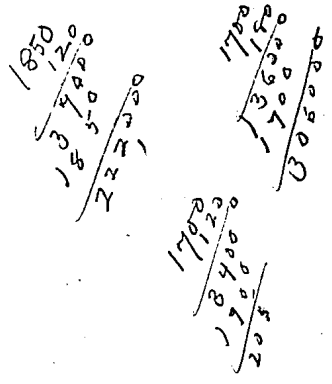
Bi tube — gives no charge or discharge

Bi tube 2 grms Na Silicate

50th 1355 100th only 120

130 to ½ & 1250 hot.

7613/150'40 (2



Should have been run longer on board

Sulphate Luna in case no harm

25% Cobalt precip in Green

Cold	50	100	150	200
927	1370	1507	1467	1466

300	450	
1360	1313 —	burnt phenom

Wt 7613

30% Co 150 Run Cent out — 1393-

50% Co 1290 - Cent out

Another 30% Co — 300 Run 1367
Note says of this had Green run on Grand Reversal turn colored brown Green very high —

25% Cobalt.

Cold	50	150	300
1083	1490	1400	1357

500
1193 —

Arsenic probably reduced to metal

This not run as long as 4 yr old 7/2 below - but these 4 yr olds 1050 to V in many Cases

Proves $N_2(OH)_2$ dont go bad its colloids destroying Contacts

Later Aug 1 1914 Cut open 1/2 of 2 old tubes 4 yrs that gone down bad - Fried flake Contacts on test machine found that 85% of flake sections were in Contact Evidently Ni itself goes bad, Colloids or dehydration, or Combination with some acid

Arsenic bad in B1 tubes - (1e)
Arsenate Na in $Cl_2O_3/1.0$

Mix taken from old 927 + 928 tubes - tubes washed free of KOH. dried 8 to 8 358 - taken out acc flakes except perhaps 15% removed - Mix treated with weak H_2SO_4 - then washed + dried.

Book 16 - 4443 -

Cold	50	100	150	200
1380	1293	1282	1327	1383
250	300	400	500	
1385	1417	1393	1350	
550	600	750		
1327	1153	1073		

Perhaps 7/2 went bad or might have run longer

Hydrofluosilicic acid precipitates Potassium as potassium Silicofluoride
Insol. — Perchloric acid precips K

Acid Metaantimonate of Potassium gives white precip of Sodium Metaantimonate — Li, NH. + Earth metals does same thing —

There is no doubt but that when H is given off more on Change, that of the Ni & Fe plates are too close we get H_2O_2 + then we would decrease a limit to the charge of the iron perhaps thick packets by poor circulation preserves most of the Fe from reoxidizing by H_2O_2 formed — it would be interesting to put paper between plates to stop oxygen going with Fe Packet

I had a Chemist (Sic!) test for H_2O_2 but he couldn't find any —

test Electrolytes of Chgd Cell for H_2O_2

To make $Ni(OH)_2$ more porous precipitate $NiSO_4$ / Manganous SO_4 } by NaOH then wash a dry put in tube put plates in 21% KOH or NaOH & Oxidize to Manganic + wash out as Manganate K

ditto $NiSO_4$ – $CrSO_4$
" $NiSO_4$ – Stannous SO_4 –

Potassium Biniodate Insol Water – sol very dilute acids – Does it react possibly reacts Ni gd Gas

Potassium Hippurate insol cold sol Hot water,

Potassium Iso-purpurate V slightly sol water – Explodes dangerously at 210 C – H_2SO_4 Explodes it its K Picro-cyanate,

Potassium Nitraminate only sol Hot water – Explodes violently on heating

K Perbromate only slightly sol water

Ditto K Perchlorate slightly sol water

K-periodate, v slightly sol water

K perruthenate slightly sol Water

K Pertungstate slightly sol water

K Phosphite only sol Hot water

K Phtalimide only slightly sol water

K Piperate, only sol Hot water

K Pyrosulphite only slightly sol water

K Silicofluoride - only sol in Hot water

K Sozo-iodolate (K Di iodo para phenol sulphonate) slightly sol water

K Urate, V v slightly sol Water

Lithia Borate, V slightly Sol H_2O
" Fluoride " "
" phosphate Insol water

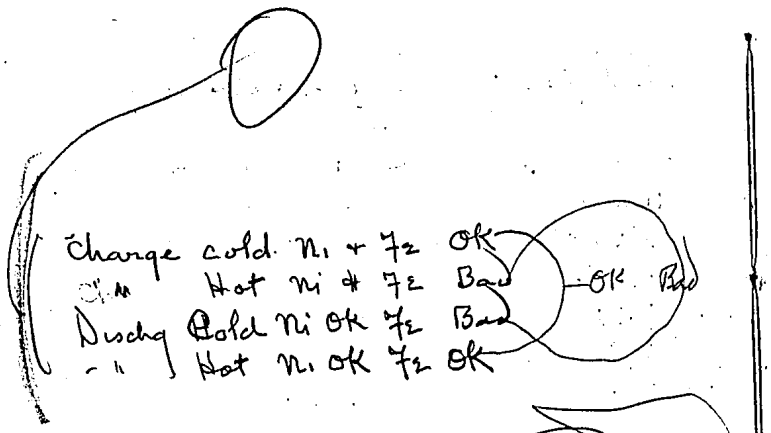
Think Fe_2O_3 from fusing anhydrous Sulfate iron in NaOH + Sulphate Soda, will give a good capacity at lower temp than Fe now ~~Nickle~~ Marked - its very fine - & possibly it will be best without Mercury as that leads to Crystalizing & make it Coarser - 1st Weber & Smith test Reg iron without Hg for effect of Cold

Cells with work KOH, Can be reduced by passing Sulphurous acid - I gave rapidly = product K_2SO_4 Try old cell thus + wash out K_2SO_4 -

Old iron from 4 yr Cells if washed with 3% Sulphurous acid - & ground thru 150 mesh is nearly as good as new, Apparently wants a reducing agent,

Strange thing is that iron looks black when taken out of SO_2 acid if washed & dried as is usually used all thru & yet runs good -

Strange!



The great problem is to equalize these two opposite Effects, because in the Cell one works against the other

We Know that Bi in NiOH, causes it to give 2½ times Reg does on hot discharge, Does oxidation of Bi give local heat enough to cause Ni OH to be easily Oxdzd while Electrolyte is cold, Cobalt would also, this may be the Explanation

Nickel tube on charging hot + disch hot gives only 1/3 the Reg temperature Charge + disch Capacity. 400 @ 50 when gives 1350 chgd + disch Normal temp — its not the iron as that gives high capacity on hot discharge.

Find from smith about Capacities
Chgd hot disch'd Cold
" Cold " Hot for Ni + Fe
Want these Curves —

We found that iron gives greatest Capacity Reduced Cold Oxidized hot

Nickel. Oxidized cold reduced Hot
is the above OK see Smith

Nickel tube chgd Cold holds its Chg in hot 130 + gives full reg Capacity. Therefore when Ni(OH)3 is formed its stable, but when Electrolyte hot its hard to Oxidize —

Is this Correct

Possibly both iron & Ni should be both on chg Cell be in cold Electrolyte & But on discharge the certain iron should have heat on its dead at 40 degs

But the Ni is also effected & Smith must find if its Oxy hot or cold that causes loss Capacity—

Its probable Ni wants to be Chgd & discharge Cold While Fe wants just the Opposite

Aug 1 1914 — Iron in new Ott #4 dia — only crimped around Edge. gives 2700 Coulombs — gives 1900 at 350 deg—

Jany 1 1914

Important to work on getting Iron finer in cell

This will increase watt efficiency - & also act at lower temperature

Have I ott make a larger batch of Iron Ox from fused Na_2SO_4 + NaOH, in which anhydrous Fe_2O_3 is dropped using slight Excess NaOH. This is practically Colloidal Iron & product could work without Heavy reduced by Hydrogen if not reduce at lowest possible temp by H ~

Jany 1st 1916

Made a lot of tests but in the End they were no improvement

9/10 of Volt —

	Cold	50	½	Hot	100	½	Hot	150	½
2294	1210	1380	1417	387	1447	1497	507	1480	1540
2295	1200	1383	1423	377	1440	1493	473	1463	1503
2296	1210	1390	1427	337	1467	1520	520	1510	1573
2297	1213	1417	1440	327	1460	1500	477	1460	1490
2298	1220	1440	1460	387	1530	1567	547	1520	1553
2299	1213	1417	1443	347	1463	1507	508	1493	1523
		1424	1435	361	1468	1514	521	1488	1530

Hot	200	½	Hot	
863	1367	1483	690	
797	1353	1403	640	
813	1413	1550	694	100 =
667	1363	1477	600	
657	1420	1497	580	
673	1407	1457	580	
744				

1164 RA green Loads req way
8.2 - This is RO 1253 RA a dup of 1164
These tubes load 7.650 - 7038 green
#159 flake 4 flake 47.6 green
Dump green then flake. then Tamp
162 Tamps

Book 11 =

The higher the hot discharge the older is the Nickel but on board gets lower

Evidently the Nickel takes a higher Charge when hot after it gets old but at same time its Cold charge gets weaker —

Book II 2501 – Case where Fe Changed after run on board a rerun right away – losses 145 mah Capacity. as if iron poisoned it or else new iron was in peculiar Condition passing effect out fresh Hg + this from Hg scum on Nickel —

(It may be Hg is a bad thing

(As Oxidation of Hg on cathode Makes a tenacious film + an insulator

(May be Iron itself goes down after few runs test iron to it

·9 V

		50	½	Hot
2501	1243	1283	1337	550
2502	1250	1323	1373	447
		100	½	Hot
		1283	1343	430
		1307	1370	403

New Fe treated by reversing put in Fe rum

		1127	1253	533
		1173	1277	577
		150	½	Hot
		1120	1177	617
		1147	1200	573
	#	350	½	H
		1050	1093	580
		1090	1167	613

Tube made with flake Copper plated – gave about Reg Capacity 50th Run #11 book 2641-2

Zinc plated ditto –

	Cold	50	½	Hot
I.V. Iron plated	823	727	733	320
	807	730	737	387
	Cold	50	½	Hot
I.V. Cobalt plated	1233	1240	1283	431
	1207	1270	1297	418
	Cold	50	½	Hot
I.V. Cadmium plated	1170	1193	1217	450
	1160	1163	1190	373
	Cold	50	½	Hot
I.V. Lead plated	1210	1260	1293	420
	1193	1247	1280	364
	Cold	50	½	Hot
I.V. Antimony plated	967	1293	1328	567
	987	1330	1350	560
		100	½	Hot
		1307	1327	—
		1273	1300	
		150	½	Hot
		1317	1350	827
		1300	1320	807

Note S.

Note Antimony – if put in solution low capacity to Volt But if Antimony plated on Tube the 1 Volt Capacity is ok & has the curious hot high Capacity –

21K 2 Li 2 K Antimonate.

	Cold	50	½	Hot	100	½	Hot
#1720	1207	573	1347	1137	590	1403	933
21	1187	610	1490	833	620	1407	990
22	1183	573	1407	1030	567	1413	830

Book #9 –

4 K Antimoniate

Cold	50	½	Hot	
1167	573	1237	973	S
1173	600	1457	780	
1180	573	1390	1067	

very high

21K No Lithia – 2K antimoniate

Cold	50	½	Hot
1147	697	1097	623
1127	1107	1173	377
1143	767	1130	623

21K No Li 4 K Antimoniate

Cold	50	½	Hot
1153	797	1163	577
1153	940	1163	520
1150	607	967	777

Be sure of if Iron Cook giving very high Antimony Grow high results

21 K 2 Li — 2 K Antimonate

	Cold	50	½	Hot
1791	1283	593	1530	940
1792	1273	633	1593	1083

This is Dup of 1777 which has Bismuth flake —

Reg 21 K 2 Li - 2 grms Antimony Connected to Each Leg —

Cold	50	½	H	100	½	H
1240	1323	1330	303	1267	1283	571
1233	1257	1270	170	1203	1217	560

150	½	H
1267	1283	740
1243	1253	647

$Ni(OH)_2$ Goldsbm 448

½% Iron precipold in green.

	V	½	H
200 Rm	1333	1347	497
	1310	1320	470

1% Fe in Goldsbm 449

150 Rm	1197	1217	407
	1123	1130	323

B_1 flake made with $B_{12}O_3$ 1625 cc
NH_4Cl See Book 10 #1750-1-2
flake weakened tears by stirring
showing large part Ni flake
replaced by B_1 292 Dump 7.720

50	½	Hot	100	½	Hot
1290	1467	1527	1087	1477	1610	1087
1293	1457	1517	1080	1477	1607	1060
1283	1460	1533	1007	1500	1630	1117

150	½	Hot
1313	1440	1180
1333	1473	1287
1327	1460	1303

Note high hot.

What is it

RA 1164 8.2 green -25 lb lot.

4.2 flake 24.1 green – dump green then flake
Then lamp 8.105 – green used 6.871

Cold	50	½	H	100	½	Hot
1097	1210.	1273	247	1287	1350	320
1080	1267	1320	240	1363	1420	370
1077	1197	1307	243	1300	1390	387
	1225	1300	243	1316		

150	½	Hot	200	½	Hot
1277	1380	400	1270	1450	527
1357	1467	423	1287	1543	523
1300	1420	377	1263	1473	520

Changed Irons

250	½	H	300	½	Hot
1413	1453	533	1330	1397	580
1540	1580	627	1390	1477	597
1473	1523	577	1383	1443	627

350	½	Hot
1283	1367	570
1260	1380	590
1323	1413	600

Net Split

or Rumps Broken

This shows great swelling Capacity of Nickel hydroxide, less the flake more the work being more green

Split – 3 rumps broken

4 flake – 36 green to dump

7.800 6.934 green

Cold	50	½	Hot	100	½	Hot
1113	1350	1373	267	1443	1477	433
1087	1270	1313	267	1357	1430	453
1103	1310	1353	270	1433	1480	553

150	½	Hot	200	½	Hot
1393	1477	400	1330	1533	517
1313	1420	383	1223	1477	497
1387	1450	423	1330	1497	433

Changed Irons

250	½	Hot	300	½	Hot
1437	1500	587	1230 X	1323	707
1433	1507	567	1123 X	1247	710
1433	1493	553	1200	1330	690

Co

48 green 4 flake –

Split – 3 Rumps broken

Cold	50	½	Hot	100	½	H
1117	1350	1383	320	1477	1510	593
1080	1260	1313	306	1393	1457	580
1117	1337	1360	293	1460	1500	697

150	½	Hot	200	½	Hot
1440	1493	483	1390	1543	477
1327	1443	420	1320	1483	410
1450	1507	500	1420	1550	487

Changed Irons

250	½	Hot	300	½	Hot
1460	1527	}	1230	1323	707
1400	1460	}	1123 X	1247	710
1477	1507	}	1200	1330	690

Co

Book 10 – 2090 tubes

60 green 4 ff — 7.573
average of 6 tubes — 7.058 green

Cold	50	½	Hot	100	½	Hot
1115	1328	1353	603	1382	1430	455

150			200	½	Hot	
1354	1416	590	1342	1383	506	Clyd Fe

250			300	½	Hot
1229	1319	582	1177	1275	593

Average 6 72 green 4.4 f 1164 green

Cold	50	½	Hot	100	½	H	200		
1076	1298	1325	730	1361	1406	421	1268	1341	488

Walking beyond this –

~~Thank previous book~~ new

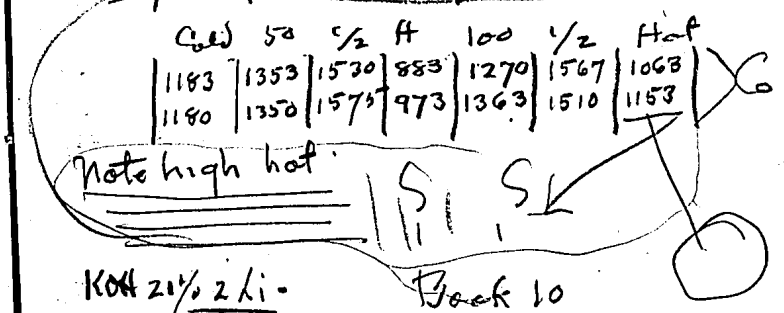
more –

~~Book 52~~

Reg. tube 21 K 2 Li –
2 grms phosphotungstic Acid in KOH.

Cold	50	½	H	100	½	Hot
1183	1353	1530	883	1270	1567	1068
1180	1350	1575	973	1363	1510	1153

Note high hot



KOH 21% 2 Li –

Book 10

Phosphs Tungstate K 250 M.lg – # 2015-16-17

Cold	50	½	H	100	½	H		
1197	1313	1377	660	1290	1430	693		
1197	1287	1347	510	1287	1407	643		
1210	1357	1357	533	1300	1420	690		

500 M.lg Phos tungstate 2018-19-20

Cold	50	½	H	100	½	H
1190	1283	1350	540	1273	1410	703
1190	1283	1347	583	1243	1440	633
1187	1287	1357	647	1273	1440	633

750 M.lg PWo – 2021-2-3

Cold	50	½	H	100	½	H
1220	1313	1410	757	1237	1490	740
1210	1313	1383	723	1287	1470	723
1207	1313	1383	750	1273	1480	823

Book 10

1 gram Phosphotungstate K 2024-5-6

Cold	50	½	H	100	½	Hot
1207	1313	1463	753	1287	1487	830
1220	1290	1413	917	1280	1500	817
1210	1287	1387	627	1220	1473	800

1½ grms Phosphotungstate

Cold	50	½	Hot	100	½	Hot
1213	1323	1450	587	1120	1623	863
1193	1290	1433	587	1100	1617	783
1207	1290	1440	817	1170	1580	840

High

Note 100th Run To ½ U

There is something in the phosphotungstate of K- try 2 2½ 3 & 4 grams to a test cell -

Try Borotungstate of K

Phos tungstic acid acting on 4 yr (Black Note) & make tests Collins in Wash water None with Phos Molybdate

Lot of Regs with different flakes when we were Oxdzg + Expermntg

Book 8

9660-9661

750 Run Chgd to

700	½	Hot	950	½	Hot
960	1350	707	940	1217	720
1027	1373	673	1047	1350	700

Changed to

800	½	Hot
750	1077	660
897	1233	680

Co

to - Not changed

9662
9663

700	½	H	750	½	H	800	½	H
1240	1567	740	1080	1437	750	900	1350	663
1110	1433	647	1133	1440	700	1000	1313	637

Co

9871-2

700	½	H	750	½	H	800		
1067	1407	627	1213	1413	676	1123	1257	747
1063	1297	520	1133	1243	573	1083	1263	747

Changed to

850	½	H.
1050	1107	700
1037	1097	733

Co

There are Several More at same place in book 8

Book 8

723 green-sheared flake made as now

24 green 3 mlg flake each dump

Cold	50	100	150	200	250	300	350	400
1240	1313	1400	1400	1437	1400	1400	1357	1303
1233	1300	1363	1363	1410	1380	1390	1363	1340

2 Mlg flake each dump

Cold	50	100	150	200	250	300	350	400
1257	1350	1400	1363	1433	1390	1403	1350	1303
1260	1350	1410	1460	1433	1400	1397	1317	1313

9 remark that changing irons seems to hurt, but if Bi is used it improves capacity

Changed F_2

450	500	550	600	650	700
1200	1223	1083	1220	967	887
1333	1327	1220	1330	1057	947

CF_2

450	500	550	600	650	700
1227	1193	1090	1217	887	807
1223	1223	1003	943	573	790

Soaking old bad tubes.

Only ones gained is

Conc Potassium Benzoate	34 mah
Strong Zn Chloride	66
NH_4Cl strong	120
Na Nitrite - strong	147
Zn Sulphate "	140
K Chlorate	50

Arsenate Na 1 tube lost 200 other gained 200

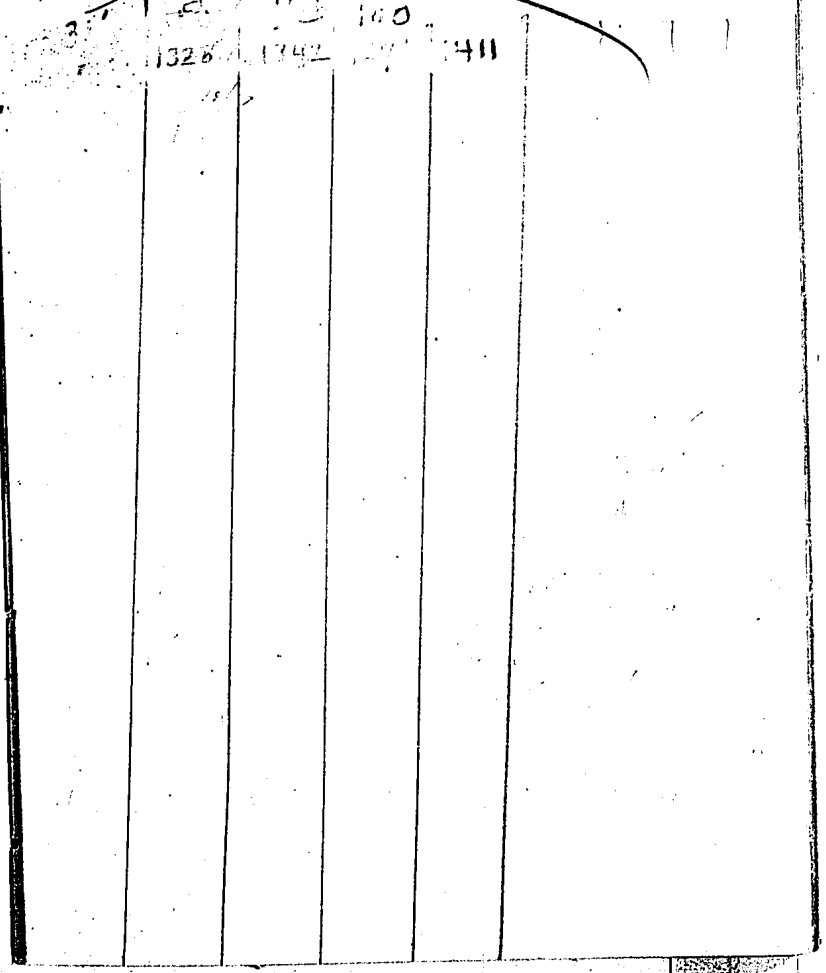
Nitrate Ammonia brightened up Everything Neither gained or lost,

Book 22 - Thank previous books have more —

Following Materials put in tubes with flake Reg way Cut no Nickel Lead - 21 K 21.

		Cold	50	½	Hot
6.170	Cerium hydrox	20	0	01	10
6.500	Nickel Molybdate	265	0	0	310
9.5	Barium Chromate	10	0	0	10
8.5	Strontia "	0	0	0	0
6.200	Calcium "	33	0	0	72
8.5	Cadmium "	33	0	0	39
7.7	Cerium Molybdate	1	0	0	7
6.7	Iron Chromate	1.7	0	0	2
6.000.	Ni "	570	487	520	425
6.5	Cobalt "	145	120	120	307
4.5	Magnesia Oxalate	0	0	0	0
10.400	$CaWO_3$	0	0	0	0
15.350	Hg Chromate	1093	70	108	72
10.700	Strontia Tungstate	13	30	37	23
7.100	" Fluoride	8	30	37	23

My Experiment of soaking grain in different strengths of Cobalt Sulphate



My Expts soaking Cobalt Sulphate in green — Solutions containing the percent of anhd $CoSO_4$

	50	½	H	100	½	H	150
3%	1328	1342	473	1271	1411	508	(1331)
5%	1308	1323	502	1261	1383	522	(1313)
7%	1329	1344	482	1259	1413	527	(1369)
10	1313	1329	454	1252	1396	548	1341
15%	1288	1307	508	1239	1392	575	1342
20%	1298	1327	531	1322	1428	559	1332
25%	1361	1380	560	1398	1437	612	1429
35%	1378	1396	623	1365	1421	639	1420

Wt 7.480

Reg Green 1% Uranous hyd roxide

Cold	50	½	H	100	½	H	150
1150	1363	1387	533	1421	1453	707	1481
1123	1360	1313	533	1330	1377	707	1347
1160	1363	1387	643	1410	1430	825	1457

Loading Wt 7.480

Uranous

Important to Expmt with this

Wt Weight

3%	7.193	20%	7.220
5	7.193		
7	7.136	25	7.202
10	7.175	35	7.170
15	7.184		

½	H	200	½	H	250	½	H	300	½	H
1435	580	1144	1308	674	CO					
1388	559	1175	1348	644	CO					
1443	570	1151	1323	604	CO					
1404	565	1207	1466	638	1156	1324	633	1066	1275	577
1415	650	(1391)	—	723	1271	1416	606	1209	1385	725
1408	678	1329	—	677	(1322)	1440	732	1226	1378	—
1481	833	1421	—	681	1397	1515	705	(1352)	1469	764
1473	849	1404	—	757	1377	1491	658	1349	1469	761

2% Reduced

bridesight swallow

½	H	200	½	H	250	½	H	300	½	H
1487	765	1447	1527	767	1430	1557	767	1397	1493	750
1387	680	1380	1453	723	1380	1480	733	1393	1477	567
1483	723	1417	1483	790	1430	1483	687	1323	1397	707

Uranous hyd probably oxdzs to Uranic Oxide Combines with N_2 to form N_2 Uranate which is absolutely insol in KOH et Cement Mix like Bi carbonate Upholds Contacts

	350	½	H	400	½	H
10%	1148	1343	—			
15						
20				7 Runs		
25%	1077	1338	662	1237	1412	
35	1122	1360	704	1269	1488 Co	

Note 1 25% after new runs 1480 to volt.

Swollen bent, split 4 places

bad bent, swollen, split 3 places

1/0 Uv

350	½	H	400	½	H
1267	1407	850	1057	1323	733
1267	1410	857	1150	1400	757
1163	1263	793	1023	1280	737

250th run over on board

Went To

	½
1523	1573
1473	1557
1467	1510

Uranous

Something in Uranium

Reg cells do not get clear results
Even run ordinary temperature

The Uranium 1/0 Dreg. to 7654 book 22 =

One tube got to 15679 1/2 1610

on 400th Run 1360 9 1/2 1527

The Boss is — Cost 213 MAH per Gram
beat B3 232 "

Reg green soaked 48 hours in Conc Cobalt Chloride - 7055 weight

Highest tube taken

50	100	150	200	250	270 Removed
1287	1393	1467	1480	1453	1503

bad split

300	350	450	500	550
1463	1483	1467	1320	1297

600	650	700
1490	1440	1153

showed heavy. Changed grains to run more on board

up to 600 both Tubes about same item on bad split - 860 Hot.

For full runs on Fe def % of Hg see Fe book marked X on Cover

Tubes not plated - but annealed
Wt 7.000 — 21K2 Li 1256 grams

50	100	200	250	300
1260	1288	1355	1250	1275

350	400
1030	

Ni OH. precip with only Theoretical amount of NaOH.

50	100	
1210.	1237	Co

Goldstein 659 — 1% Co — Ni OH, 7.230 wt

50	100	150	200	250	300
1406	1450	1445	1396	1340	1196

350	400
1270	1100

3% Co — 209 mah per gram batt 6.830 wt

50	100	150	200	250	300
1412	1432	1373	1250	1200	1150

350	400
1120	1040

4% Co 6.900 wt

50	100	150	200	250
1420	1405	1360	1275	1150

300	350	
1120	1140	Co

5% no Gelin Ueorea 6,600, wt, Rhoads hardchargers Some also run on boundcoated

7117 - Goldslem 621 12% Bi

Can not plated inside - Nickel tube Connected to Can

highest tube

50	100	150	200	250	300
1635	1710	1533	1570	1533	1640

350	400	450	500
1417	1033	1063	1153

Kept in dark at Lake

Iron Connected to Can

50	100	150	200	250	300	350
1467	1443	1400	1203	1383	1380	1253

400	450	500
1300	1187	557

Abrogast Co 1% best tube

50	100	150	200	250	300
1397	1410	1423	1390	1407	1347

350	400	450	500
1200	1100	1143	1053

Nickel tubes not plated
Can't be used with Bismuth
Goldsm 621 12% best tube

50	100	150	200	
1610	1180	867	667	test

showed Irons OK

This is a Clue

Impure Ni

5% Erbium hydrox precip on Ni OK-

Cool	50	1/2	Hot	Nate Hot
1063	980	993	720	

5724 Dry NaOH Ni SO4 on Rolls
7566, lot 9 probably pressed on bullous

400 Run best	450	700	750 split plan sworn
1533	1433	1123	1150

Something wet

Green flake from cells 1690 To 1695 after burning 600 times removed treated with glycerine + KOH. to reduce — floated off flake & treated it with 2% H_2SO_4 — grain washed free of glycerine + momentarily dashed in 2% H_2SO_4 — Reloaded 27 grain .0083 flake 7560 lot

215 Drumps

	Cold		50	½	H		100	½	Hot
S	1513		1487	1523	967		1350	1460	983
	1507		1480	1527	970		1367	1513	1027

150	½	H	200	½	H
1320	1433	977	1167	1280	850
1320	1440	1008	1170	1267	853

250	½	H	300	½	H
1267	1367	863	937	1020	847
1297	1390	860	1073	1183	890

Reg short (old tubes) soaked 6 tubes — soaked in gallon 21% KOH for a week gave not a trace of LiOH in the gallon Analysis of tubes gave 700 mlg of LiOH + 1800 mlg KOH per tube — on long tube this is 1 gram LiOH that always in tubes of keypel in 21% KOH.

Latest combine

Holland: test of big cell in water Changed from time to time showed LiOH. Kept coming out after KOH. was practically all removed He has record —

No LiOH Combs Stable in 21% KOH but decomposes in water

Take 100 of our Rubber Separators
5 or 6 Cells & treat
1st HCl —
2 Acetone
3 Benzol
4 Hypochloric
5 acidic
6 Chloroform
Roth 21% 24 hrs, allowed to
Evaporate liquor off
Each lot to see what
residue —

Try 2 test cells, (the — allowed to
Electrolyte Saturated
Lith & 10% of —
Carbonate Potash

The Material from 4
Returned Adams Ex
Cells 100 amp hours
Taken out by
Smith's on
Christmas hands
Experiment on it

Goldstein Book 19=

Dry Ni SO4 + Dry NaOH. mixed in Rolls
washed + dried at 130 Fahr – 7566–7473

Cold	50	100	200	300	400	700	½	¼
1217	1360	1460	1447	1450	1533	1123	1417	627
1246	1360	1483	1483	1400	1390	1013	1267	597

had been pressed in Cakes ½" thick 300 atmospheres
ditto

Dried 16d – 7318–7308

Cold	50	100	200	300	
1227	1360	1467	1437	1378	Co–
1230	1333	1417	1397	1193	

Note temp of Drying –

A tube which loaded
8.000 after drying 48 hours
at 212 Fahr loaded 7662
7700

Ni mix from old Cells –
Seperating flake from Ni –

Chemical	hours		Ni dissolved
K Bichrom	72		None
K Oxalate	72		Much —
K Arsenite	24	green	All Ni went through filter
K Sulphite	52	V green	Much
K Cy	24	Yellow	"
K Hydrosulphite	52	Green	"
K Bitartrate	72	"	"
K Iodide	72	Brown	None
K Ferrocy	48	G Tinge	Some
K Sulphite	48		Some
K Hyposulphite	24	None	None
K Hypophosphorous	48		None
K Lactate	24	green	Much
K Carbolate	96		Some
K Sulfocyanate	96		"
Rochelle Salts	96		"
K Cyanate	96	V green	Much
K Formate	48		None
K Salicylate	30	Large precip sol H_2O.	Some
K Tannate	96		Some
Na Cy	96	Brown	Much
Na Hyposulphite	48		None
Na Sulphite	48		None

Chemical ~~&~~ hours Ni dissolved

Na Bisulfite ~~48~~	48	V green much
Na Salicylate	48	None
Na Sulphocarbonate	96	green much
All flake dissolved, Lots Sulphur		—
Na Peroxide	48	none
Na Lactate	48	some
Na Sulphanilate	48	none
Na Sulphie Phthalate	48	V green much
Na & K Sulphate	96	none
Na Bicarbonate	48	V green much
Na Ferrocy	48	Some
Na Tetraoxalate	96	V green much
Na Persulphate	96	green much
Na Bromate	96	none
Na Chlorate		none
Na glycerophosphate	96	none

3% H_2O_2 gave very much, seperation in about 10 hours no Ni dissolved

Specific gravity	NaOH	KOH
10	1·012	1·083
15	1·170	1·128
20	1·225	1·177
25	1·279	1·230
30	1 332	1·288

1st 50 Hot runs, Comparison between NaOH + KOH old green & Chunk

	V	½	Difference	% Ni ore
33%	718	324	—	42.9
31	646	718	+ 72	40.3
29	820	855	35	37.7
27	844	998	154	35.1
25	905	991	86	32.5
23	899	1005	106	29.9
21	904	993	89	27.3
19	933	905	= 28	24.7
17	931	907	= 24	22.1
15	915	907	= 8	19.5
13	881	903	+ 22	16.9
11	855	914	59	14.3
9	813	877	64	11.7
7		830		

21% KOH saturated with LiOH. Contains in 100 cc 2.8586 Milgms LiOH.

15% NaOH saturated contains 3.2936 milgms LiOH—

K Stearate Sol 21% KOH, almost same as 21% KOH saturated with LiOH.

With the Cobalt Sulfate ~~seal~~ 3% to 35% Each 5% increase ~~output~~ life 50 Runs—

Reg 7.500 grain soaked in strong Cobalt Sol dried + pped in grain gives loading wts of 7.160— probably makes it harder + prevents heavy loading by deforming— Eventually wax at NaOH will give heavy loading by deforming a porous grain + make gas to burst that must be reason why NaOH worked so unsurprisingly well when pores filled with Ba SO4 etc—

Here is a Clue =

Heavy loading wts in many Cases give only 1040 to 1100 on 50th run

3% Cobalt SO4 up to 35% soaked in Reg grain gives 7.160 to 7.210 for every degree of strength,

Clue

Practice in working Ni Reg
Soaking in Conc Cobalt Chloride
that it was very different
to get the Chloride out many washings
& 4 days soak — Eventually pores
are very fine being filled with
$Co(OH)_2$ & thus circulation very
sluggish for Chloride —
Also this must harden grades
& gives low loading wt.

A Later Expmt shows that the
Water used to wt of Ni was
entirely too small
Mastication probably
Comes in — Using same dish
& 1/10 of the Ni got OK
with 1/5 of the washing
of the big lot.

854 grams

2 lbs	Tamps	L Wt	5,521
2½	"		5,902 — .381
3	"		6.027 — .125
4	"		6 33 — .303
4½	"		6.399 — .69
5	"		6 445 — 46

gain .9 of gram only

3325 =
1164 grams mixed with 15% K_2CO_3 thru 30 mesh
on 190 41 & 48.4 grams 134 Dumps
L Wt 7000

Cold	50	100	150
883	1180	1387	1183
556	793	870	887

Dup 25% K_2CO_3

Goldstein 519 = Book 16 - -

25% Cobalt wt 7603 } 7565 }

Cold	50	100	150	200	248	300
927	1370	1507	1467	1460	1430	1360
917	1316	1450	1413	1407	1397	1367

350	400 cold	450 burnt
1283	1200	1313
1347	1290	1150

All high Hat

30% Co wt 7602 7652

Cold	50	150	
963	1337	1393	} Co
933	1390	1383	

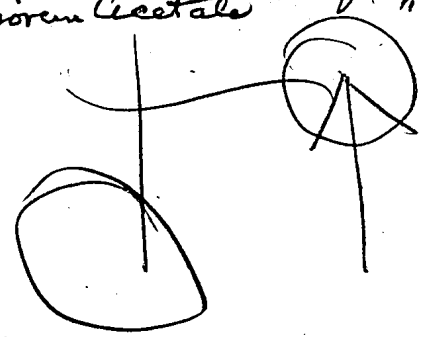
50% Cobalt wt 7362 7516

Cold	50	100	150	
783	1297	1327	1290	} Co.
750	1247	1270	1267	

Following Mercury Salts solu

21 KOH 2 gtsh without precipitation -

Phosphoglucamia Acetate,	Considerable -
Arsenate Hg	Sol
Naphlo-Lactate Hg	"
Hg Succinamide	"
Hg Succinate	"
Metaarsenic Cy	Very Sol
Hg Iodide	"
Hg Salicylate	"
Hg Methyl Chloride + Ethyl Chloride	"
Hg Oxycyanide	Large amount
Amido-propionate.	"
Hg Malate.	fair
Mercaptide Hg	Extremely Sol
Asparaginate.	Very Sol.
Phenyl acetate	"
Thymolate	Sol
Hg Ferrocyanide	quite Sol.
Hg Resorcin Acetate	"



2 grms Dinitrobenzine –
Cold 1223 / 1213 ½ 50 Runs 173 / 100 to Volt
but ½ Volt vs 1633 5 5 5
1620 : : :

Acetanilid 2 grms Cold 1190 / 1210 50 Hot vs
153 / 183 to V ½ vs 1537 5 5
1510 : :

Picric acid Cold 840 / 260 50 Hot
137 / 130 – to V ½ V vs 1427 5 Hot 510 / 440
1420 :

Benzidine Cold 1060 / 1037 50 Hot
533 / 583 to V 827 / 767 to ½

Hydrochinon
K Silicofluoride
Camphoric acid
K fluoride
Rosolic acid
} 50 Hot vs higher than Cold run

Quinidine
Quinine
Benzophenone
Monobromobenzine
Carbazol
Cresotinic acid
Trichlorophenol
Amidoazobenzine
} higher after 50 runs than Cold

Dinitrotoluol Cold 1157 / 1203 50 Hot 400 / 153 to V
½ V vs 1460 / 1500

Cresol 363 / 373 Cold 50 Hot 423 / 440 to V
½ 433 / 450

Carbon trichloride
Monomitronaphthalen
Benznaphtol
Nitroso beta Naphtol
Sodium Stannate
} higher after 50 Hot than Cold

~~Phosphate~~

Telluric acid. Cold 1147 1147 50 Hot

1070 1047 ½ 1090 1063

RA 1052 Green dried in drum from Rolls
mush – blowing air through drum which was heated from outside; Loading Lots

6.410 % = Cold 1013 1020

50 Runs 1140 1170 to V 1157 1190 ½ V–

9 V Miller RA 1189 1191 1192– Lwt 6552 6456 6122

1194 6.640
1195– 6.746
1196– 6.140
1197 6.875

Most gave 1160 to 1200 at first 150 Runs

Flake coated very lightly with Antimony by heating at 24 hours in $SbCl_3$ NH_4Cl

Cold	50	½	H	
783	1280	1310	850	Lwt 7.460
683	1177	1217	966	

Another – gave high wt 793 – 1293	100	½	Hot	
cold 967 50 Hot 1330	1100	1160	1053	
907	877	917	950	note hot.

RA Lightgrain average Lwt 6.200
Run thru Rolls – after being wet with 5% H_2O. 275 Dumps Lwt 7.935

New grain book 11 No 2515

Goldstein

10% Cobalt precip in Gram, Goldstein

Our #4229

	Cold	50	½	H
L wt 6.688	777	1020	1063	350
6.690	780	1033	1063	360

100	½	Hot
1060	1080	
1087	1097	367
		423

#4231

15% Cobalt in Gram

	Cold	50	½	Hot
L wt 6.814	710	1000	1063	403
6.890	714	1020	1063	423

20% L wt 6.644

	Cold	50	½	Hot
6.666	390	920	933	420
	387	923	933	420

25% Sig - #4313

L wt: 7603

7565

	Cold	50	½	H
	927	1370	1400	870
	917	1367	1400	833
	150			

100	½	Hot
1507	1563	920
1450	1500	867

200	300	450
1460	1360	1313
1407	1367	1150

#4315

30% Cobalt L wt 7602

7652

Cold	50	150	
983	1337	1393	Co
933	1390	1383	

50% Co - L wt 7362

7516

Cold	50	100	Hot
783	1287	1327	870
750	1247	1270	800

150

1290

1267 - should have been run longer on brass

#4323 Goldstein L wt 7462

7831

Cold	50	100	½	Hot
1020	1393	1507	1547	897
1012	1367	1523	1570	887

300 Run	450	½	Hot
1367	1127	1247	673
1353	1147	1323	740

15/Co	163 per gram 50 atm
15	148
20	133
25	140
30	150
50	170 -

} Unreliable

50% Copper precip milligram

Cold	50	1/2	Hot
907	1037	1050	407
890	1037	1058	390

50% Barium Ox milligram

Cold	50	1/2	Hot
970	1000	1017	630
977	1017	1033	630

50% Iron

Cold	50	1/2	Hot
193	283	313	50
187	267	297	53

50% Manganese Ox.

Cold	50	1/2	Hot
250	497	520	397
250	470	507	397

25% Cobalt precip

Cold	50	150	350	1/2	Hot
1067	1453	1383	1353	1427	863
1083	1490	1400	1340	1440	853

500	1/2	Hot
1190	1377	847
1193	1380	860

Using 1 gram Aluminum in Small Cell — 2 KCl is only one that helps The 1/2 Volt is high

#4472 —

Cold	50	1/2	Hot
1127	653	1533	320
1133	600	1493	323

100 Runs
No discharg

4760-1

Conc Ni_2SO_4 a 33% NaOH precip +
pressed in Cloth, Crushes with fingers
Very bulky Loading lot 6.5 oz
6 557

Cold
923 100
943 1150
1240

Dry pressed in Cake at 100 atmos
L W 6 829
6 829

Cold 100
927 1200
923 1200

Goldschmidt Mako → # 5702
L Wt 7 869 Dry Ni_2SO_4 + Dry NaOH
7 865

Made in rolls dried in steam 60°
80@85 Cent pressed 300 atmos 1/8" Cake

Cold 50 300 500
1200 1303 1430 1347
1223 1343 1467 1333

650 — Split + plane stone Swallow
1110
943 — bradley Swallow

Another one 450 700
1433 1123
1173 1013

$Ni(OH)_2$ Loading 8,000
Dried 212 for 48 Hours
Loaded 7 662
7.700

Cold 50 100
1237 1293 1250
1233 1280 1240

Reg Ni —

	Cold	Hot
3 grm Manganic hydrox	1157	1320
	933	1243

Hot
857
827

	Cold	Hot
1 grm Manganic in cell	1173	1263
	1157	1260

½	Hot	250
1500	823	1353
1290	857	1330

1 & 3 grm ZnOH, Lower on 50 than on Cold

The sulphate Cobalt-
Series 8% to 35%
average

	50	½	Hot	
10%	1341	1404	565	50 Hot
15	1342	1415	650	
20	1332	1408	674	
25	1429	1481	833	
35	1420	1473	849	

		½	Hot	
10	1156	1324	633	250 Run
15	1271	1416	606	
20	1322	1440	732	
25	1397	1515	708	
35	1377	1491	658	

		½	Hot	
10	1066	1275	577	300 Run
15	1209	1385	725	
20	1226	1378	750	
25	1352	1469	776	
35	1349	1469	761	

		½	Hot	
25½	1077	1338	662	350
35	1122	1360	704	

		½	
25	1243	1445	new ½
35	1267	1457	"

Cold

10	1293	1297	1280
15	1243	1230	1247
20	1273	1290	1310
25	1310	1300	1330
35	1343	1317	1333

Cold of Mn soaked in Cone Cobalt Chl ~~48~~ 48 hours was

Cold	50	100	200
1057	1277	1393	1467
1020	1287	1393	1480

Comes up slow

600
1490
1367

Dup only soaked about time

Cold	50	200
1263	1367	1133
1257	1350	1193

300
1273
1233

Another soaked Cone Co Cl – put on hot plate then in RON

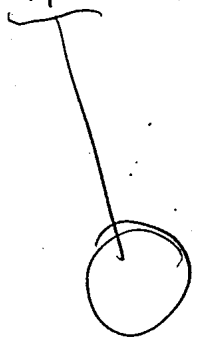
	Cold	50	100
~~Lost~~ 1002	943	1240	1317
1021	977	1190	1260

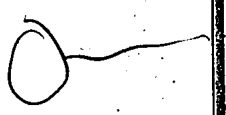
150
1427
1353 Co

1% Silver OX precip by Goldschmidt

Meth.	Cold	50	100
LW 1440	1093	1283	1350
1406	1117	1243	1353

250	350	½	Hot
1417	1317	1463	723
1400	1313	1396	700





Fr ~ see 2736 Fr book 2500 to 2850
about ½ Fr ½ Sq-

By mistake 350 Test cells were reversed on 450th run + the Capacity was gradually increased + then increased Capacity held for 200 more runs that
359
360
361
} increased to 373

Remarks found in a Corning Holland Fr effecting tests ~

Same book found a remark
" LiOH 2 grms to 175 cc 21% good on wet test,
Same as above with 5 to 8 grms K_2CO_3 added to better
K elevate sol in 21 KOH test of saturated with LiOH using
little KStannate dissolves

7c — Reg mix 3 grms dried 212°
Lost 3/10 of 1%.
This sample stood in air saturated with moisture absorbed accordingly

15 Mins	6 Mlg
30	8
45	9
75	11
105	14
135	14
225	14
315	17

Total absd in 5 hour + 17 mins
17 Mlg · 56%

Test of a Ni tube provided with index shows that a short tube of mat restrained the mix will expand 1/10th of an inch on charge 1/10th one third of this due to putting in 30 KOH + Li OH without Current —

Reg short tubes (old) soaked 6 tubes in a gallon of 21% KOH for a week, showed not a trace of Li OH. in the gallon —
The assay of the tubes showed over 0.700 Milgms of Lithia per tube or 1.800 Mlg KOH per tube there is about 1 grm Li OH per Reg long tube, Holland has record

Test of a Reg Cell in Water Charged from time to time Showed Li OH kept coming out after KOH was practically all removed Holland has record

Gradually some green — this shows too much flowing of gram in bed

Both Cobalt & Uranous Hydroxide Aid Ni mercury Life & Capacity — Neither and reduced by Fe as Iron will probably not be affected This is not true of Bismuth. Ag

A Ni graphite charged against a platinum strip gives 750 to Volt & 900 to .3 Volt only gives 375 @ 400 to V when placed close to an Iron Rod probably the free H from overcharge of the iron passes thro holes & reduces the NiO_2 Continuously & prevents charge fully

Note if this is true that Chg which circulates Liquid more rapid should increase this effect, Also A4 having such small Electrolyte should have big circulation, perhaps trials reqd. Wt Lose 8% as against short test tube cells & it may be troubles with Bismuth big cells

If all this is true should have a paper Sep between Ni & Fe to keep gases apart, - Can prove by Chg Ni & Fe Sep & use porous Caps then assemble & discharge

Graphite Nickel

I say if a 1200 mAH fully chgd is placed with a nickel discharged then on charging for say 200 MAH with 100 MA flowing — The Nickel will receive that amount of chg The Energy loss on Fe could be great but should be small on the Ni Now on discharge we should get nearly 200 MAH because Fe has great Cap nearly Yet we only get 100 MAH. (Figs from Fe Indicates Ni Ch?)

Ni_2O_3 40.67 % Oxygen

NiO 54.23 % "

13.56 % of Oxygen Capacity

7 grams Nickel going from Ni_2O_3 to NiO_2 should give 3000 Mah —
Ni_2O_3 Anhydrous

KOH 21%

Tubes fully chgd quickly rinsed in water
0.357 KOH
When discharged 0.512
Difference 0.155

NaOH 15%
Tubes Chgd 0.267 NaOH
" Discharged 0.409 "

Df 142.

	2 hours	3 Hours	4	5	6	7
21 KOH 2 Li OH	391	561	691	797	890	937
	391	562	693	798	893	937
	396	575	711	822	917	960
	393	566	698	806	900	945
17 KOH 2 LiOH	370	540	671	778	862	910
	373	542	683	785	867	908
	372	541	687	786	872	938
	375	541	682	783	867	919
13% KOH 2 LiOH	358	495	650	746	830	872
	355	485	645	736	825	878
	340	475	622	715	797	857
	351	482	639	732	817	869
21 NaOH 2 Li	393	575	738	841	942	976
	386	563	720	821	920	972
	392	570	735	841	937	980
	390	569	731	833	933	976
17 NaOH 2 Li	375	555	708	817	910	952
	386	573	742	861	960	1005
	390	574	750	865	970	1015
	384	567	733	848	947	991
13% NaOH 2 Li	381	567	730	840	935	970
	381	566	731	842	940	982
	382	568	741	857	950	985
	381	567	734	846	942	979

Averages

	Volt Effcy	amp Effcy	Watt Effcy	Volt Effcy	amp Effcy	Watt Effcy
21 KOH 2 Li	72	79.7	57.4			
	72.8	79.8	58.1			
	72.9	82.2	60.0	72.6	80.57	58.5
17 KOH 2 Li	72.2	77.8	56.1			
	72.2	78.5	56.6			
	72.2	78.6	56.7	72.2	78.3	56.5
13 KOH 2 Li	71.1	74.6	53			
	71.1	73.6	52.3			
	71.1	71.6	50.9	71.1	73.3	52.1
21 NaOH 2 Li	69	84.1	58			
	68.2	82.1	56			
	68.6	84.1	57.6	68.6	83.4	57.2
17 NaOH 2 Li	70.5	81.7	57.6			
	70	86.1	60.3			
	70.3	86.5	60.8	70.3	84.8	59.6
13 NaOH 2 Li	71	84	59.6			
	71	84.2	59.8			
	71	85.7	60.8	71	84.6	60.1

Old book Nos 9375 -

18 groups 3 to group of Nickel in small tubes with & without Lithia, shows on 50 Hot runs that 21K 2 Li gives average 422 on Hot

But Dups with 21K no Li only average Hot 156.

Showing great Capacity

Yet 50 Rg Capacity was with Li OH about 100 Watt hours than without —

The Li OH, Causes Cell to Take & give a greater Charge when hot, 2.7 times more

Why

Presence with Li OH 28.9 w alkaline & without only 21 w perhaps

9375 old book

Notice that deference between 50th Run Cap to V + ½ Volt there was a deference between Cap at 1 V + ½ V of only 42.8 Watt when no Li Oh was used 21K but when 21K2Li used the def was 115.6 Watt 15 groups 3 each used to get averages —

Volts 2.89 grams argument 21 Li Oh

Can it be that Lithia works on the iron instead of Nickel as always supposed

average 15 groups 3 each

The Capacity to V on 50th Run was for 21K2Li 1165

for 21K NO LiOh 1186 — S

In this case all the LiOh did was to increase the Hot capacity + ½ cap

Volts

Complicating Variable

Important test –

5921 Ni group giving 1247 Cold was charged Cold – Then heated to 132° for 24 hours & then discharged Cold gave

	1 V	½	
24 Hours	1022	1072	9.3 M dep hour
48 "	617	1037	12.6 "
72 "	311	961	12.6 "
96 "	203	908	4.1 "

10 M at Cost per hour

group 5909 Cobalt Flake

Chgd Cold	disch Hot 1 V	disch Hot ½	Chgd Hot 1 V	disch Cold ½
5.40 grams	741	786	452	495
1180 Cold	756	789	475	512
	777	810	487	522

Nickel flake group

Chgd Cold	disch Hot 1 V	disch Hot ½	Chgd Hot 1 V	Dis Cold ½
5.01 grams	993	999	632	642
1245 Cold	975	987	630	647
	972	984	625	636

#9602-3 Anhydrous Ceric Potassium Sulphate – Stuff all Concord

#9604-5 Manganic oxide Reduced by Hydrogen

		Cold	50	½	Hot
Lot	9,480	58	100	103	67
	9,562	27, 23	90	97	100

Swollen & Splits.

#9606-7 Anhydrous Tungstic acid reduced by Hydrogen

		Cold	50	½	Hot
Lot	25 463	33	150	160	157
	25 812	37	163	170	167

Anhydrous Titanium Ox – Lot 8402

	Cold	50	½	Hot
#9466	13	27	33	33

		Cold	50	½	Hot
Ceric hydrox	Lot 6550	3	17	20	33
#9467-8	6530	3	3	7	11

Molybdic acid Reduced by Hydrogen

		Cold	50	½	Hot
#9469-70 – Lot	14710	76	53	57	60
	14680	67	67	70	60

Anhydrous Cobalt Peroxide

9471-2 Lot 10230
10240

Cold	50	½	H		75	½	H
90	167	250	217		297	309	263
90	173	257	217		300	320	240

100	½	H
330	425	310
337	537	310

Run as Ignite 600 ½
600 1340
600 1365

150	½	200	½	Hot
685	1310	665	1414	525
675	1355	600	1420	500

9473-4 - Lot 1745
17380

Anhyd Uranous Dioxide

Cold	50	½	Hot
17	0	33	17
10	0	33	17

Anhyd Chromic Ox reduced by H # 9475-6

Lot		Cold	50	½	H
	9500	63	23	27	50
	9524	63	27	30	50

9477 - Anhydrous Neodymium Ox
Flakes with air Lot 8950

Cold
3 Busted, bad Swollen

9401 Thorium Ox Anhyd

		Cold	50	½	H
	17693		70	87	57
Pressed	17407	13	93	127	83
		13			

Lanthanum La_2O_3 Anhyd Lot 8.028
Pressed

Cold	50	½	H
23	47	53	67

Ce_2O_3 Anhyd 9405-6 Lot 7521
7604

Cold	50	½	H
7	23	27	20
7	17	20	0

Uran hydroxide Lot 10340
10373

9407

Cold	50	½	H
10	17	20	17
10	33	37	30

Cr_2O_3 Anhy Wt 7690 # 9409-10
7633

Cold	50	½	Ht
3	0	0	7
3	1.5	0	7

8797-8 = Uranium Hydrox 75 parts
Nickel hydrox 25 parts
Wt 9670-9700 —

Cold	50	½	Ht
153	323	330	210
147	327	333	210

8799-8800 Uranium Hydrox 75 pts
Bismuth Hydrox 25
Wt 11515 = 11805

Cold	50	½	Ht
3	87	110	3/
3	87	110	3/

Nickel Meta Vanadate # 8793-4 Wt 6155

Cold	50	½	Half
197	107	110	137
197	103	110	133

Uranium Hydrox 75 pts Cobalt Hyd
25 parts # 8803-4

Cold	50	½	Ht
60	90	110	93
53	67	90	97

Uranium Hydrox 00
Thallium Iodide 00
Iron Vanadate 00
Tungsten Bronze 00

NiOH from precip Nickel Oxalate NG
" " Nickel phosphate NG
Low Load + poor Capacity
750 to V 50th Rnd

8929 – $NiO(OH)_2$ pp from Nickel Borate

Wt 7320
7257 Capacity about 1130

from Nitrate Cap 1067 wt 6024
" Arsenate " 1070 wt 6920

Caphos
Baphos
Srphos
Ca Carbonate
Ba "
Sr "
Ca Borate
Ba "
Sr "

} used with Nickel flake like req ni

all gave capacity less than 30 mah

NaOH. 2 LiOH -

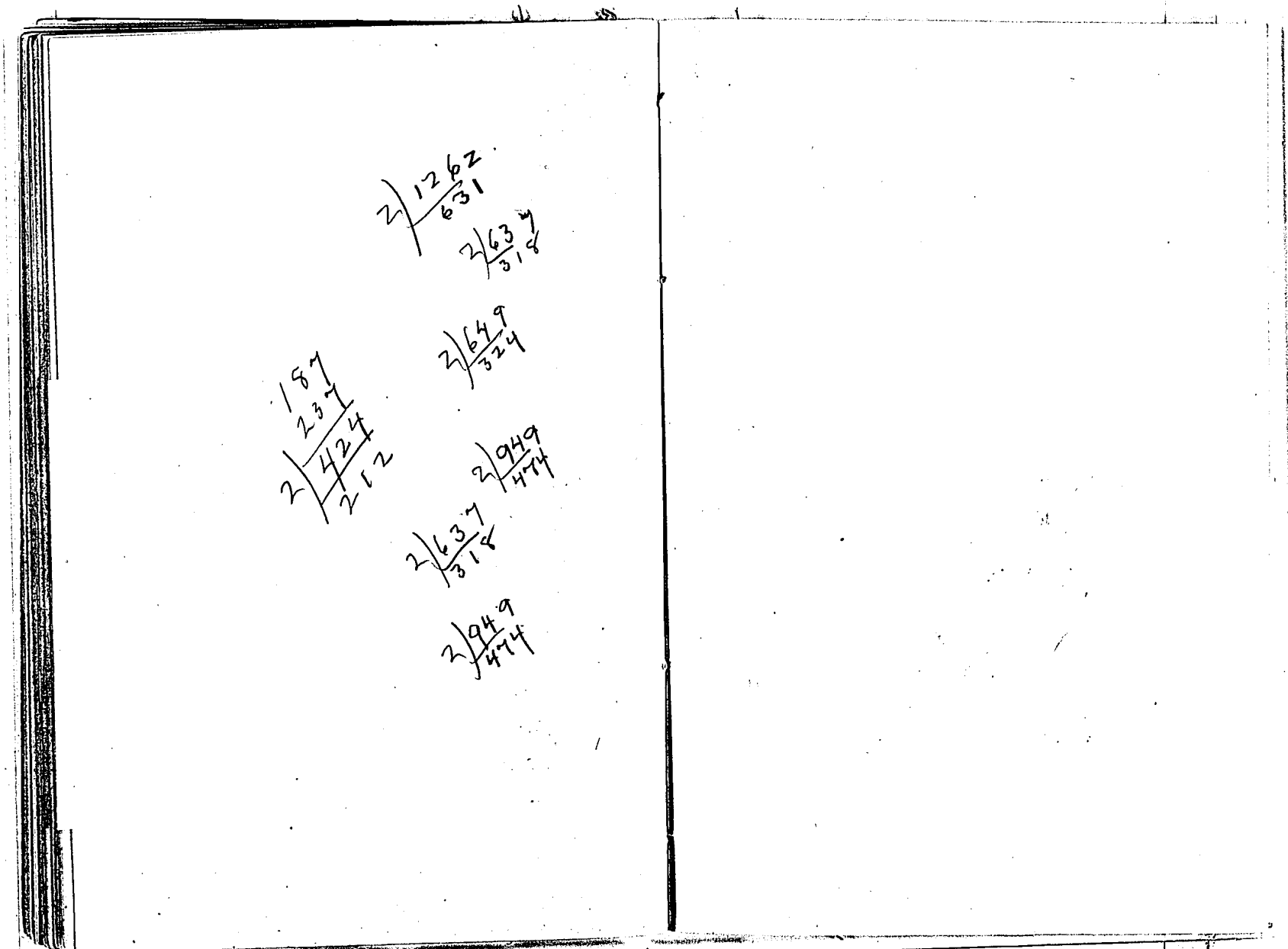
	Ctrl	50	100	150	200	250	300
27	1070	670	481				
25	990	841	689				
23	1286	1028	822	540	343		
21	1257	1264	1090	792	553		
19	1267	1307	1261	1062	707		
17	1250	1255	1285	1117	868		
15	1209	1244	1204	1202	1030	978	
13	1219	1190	1117	1073	949	826	
11	1193	1123	1023	959	819	718	
9	1184	1106	970	919	827		

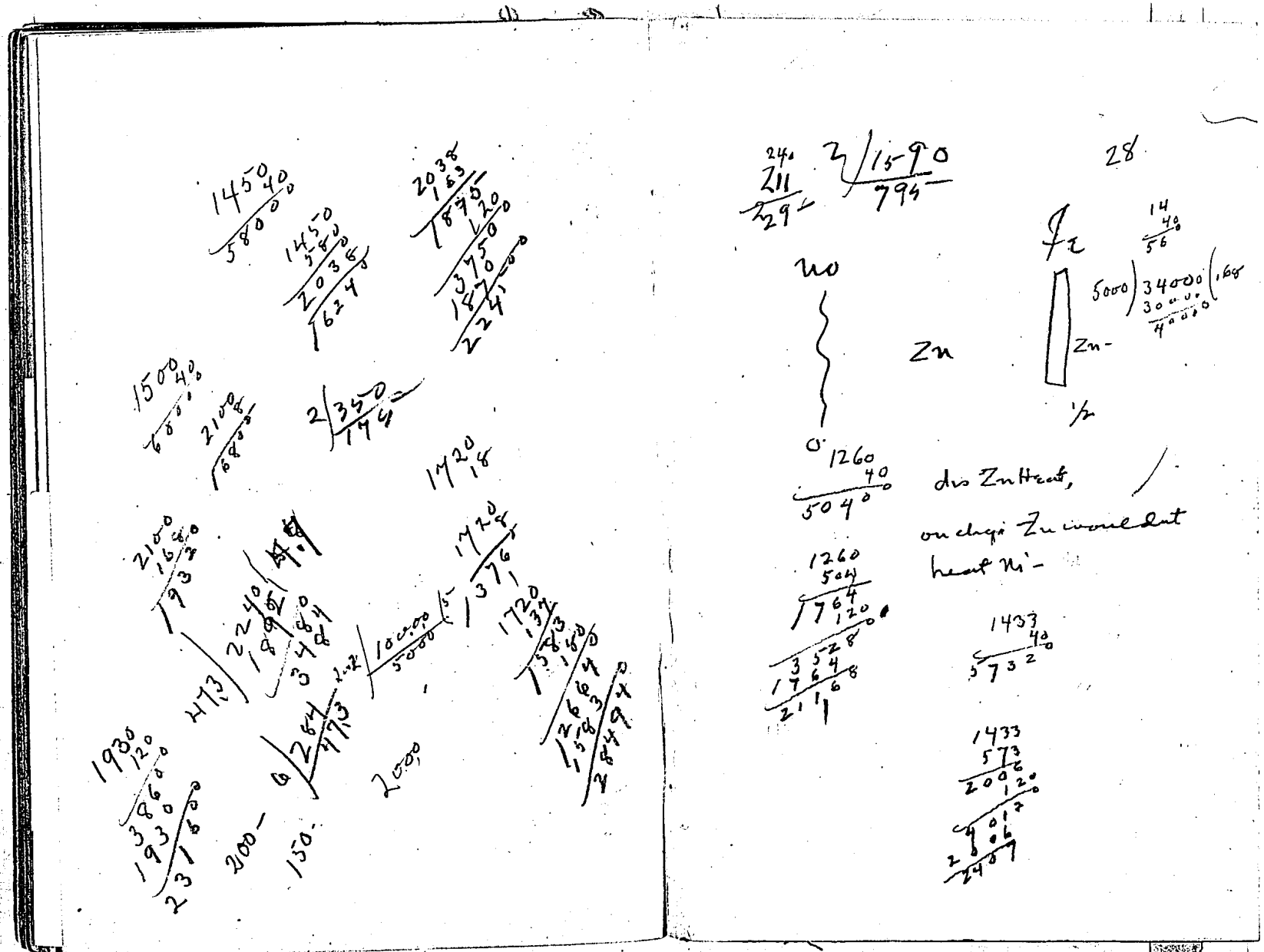
KOH 2 LiOH.

27	1337	1362	1367	1300	1144	1193	1051
25	1316	1316	1356	1079	965	1232	1142
23	1239	1275	1316	1295	853	1221	1135
21	1190	1222	1220	1045	—	1010	1038
19	1175	1212	1182	1053	—	942	
17	1157	1183	1090	992	893	714	
15	1153	1139	1021	844	800	621	
13	1174	1161	1026	771	766	655	
11	1159	1129	1016	464	665	510	
9	1116	1108	999	652	467	476	

15% 2 Li for NaOH
25% 2 Li for KOH.

first from this


2 | 1262
631
2 | 637
318
2 | 649
324
157
237
2 | 424
212
2 | 949
474
2 | 637
318
2 | 949
474

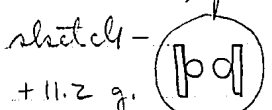

Zn
Fe
Zn
½
dis Zn Heat,
on chg. Zn in melt
heat Ni-
28

[ITEM(S) FOUND IN BOOK]

FEB 24 1910

Misc. Exp. #1752-74.

Mr. Edison: You wrote me last week about trying a small cell with an Fe pocket short-circuited to a Ni tube as the positive electrode and the same for the negative electrode. I had 3 cells made of new tubes and Fes, positioned in glass jars like sketch — filled these with 21 of 10 KOH + 11.2 g. LiOH per l. and ran as regular tube cells with following results:



RUN	CELL A 1V	CELL A .5V	CELL B 1V	CELL B .5V	CELL C 1V	CELL C .5V	AVERAGE 1V	AVERAGE .5V	
1	963	1147	963	1147	983	1160	970		
2	1147	1317	1133	1310	1127	1293	1136		
3	1160	1310	1150	1317	1167	1300	1159	1309	
4	917	1033	843	967	920	1033	893	1011	— Monday run.
5	1110	1277	1110	1277	1110	1237	1110	1264	
6	1120	1290	1117	1283	1097	1233	1111	1269	

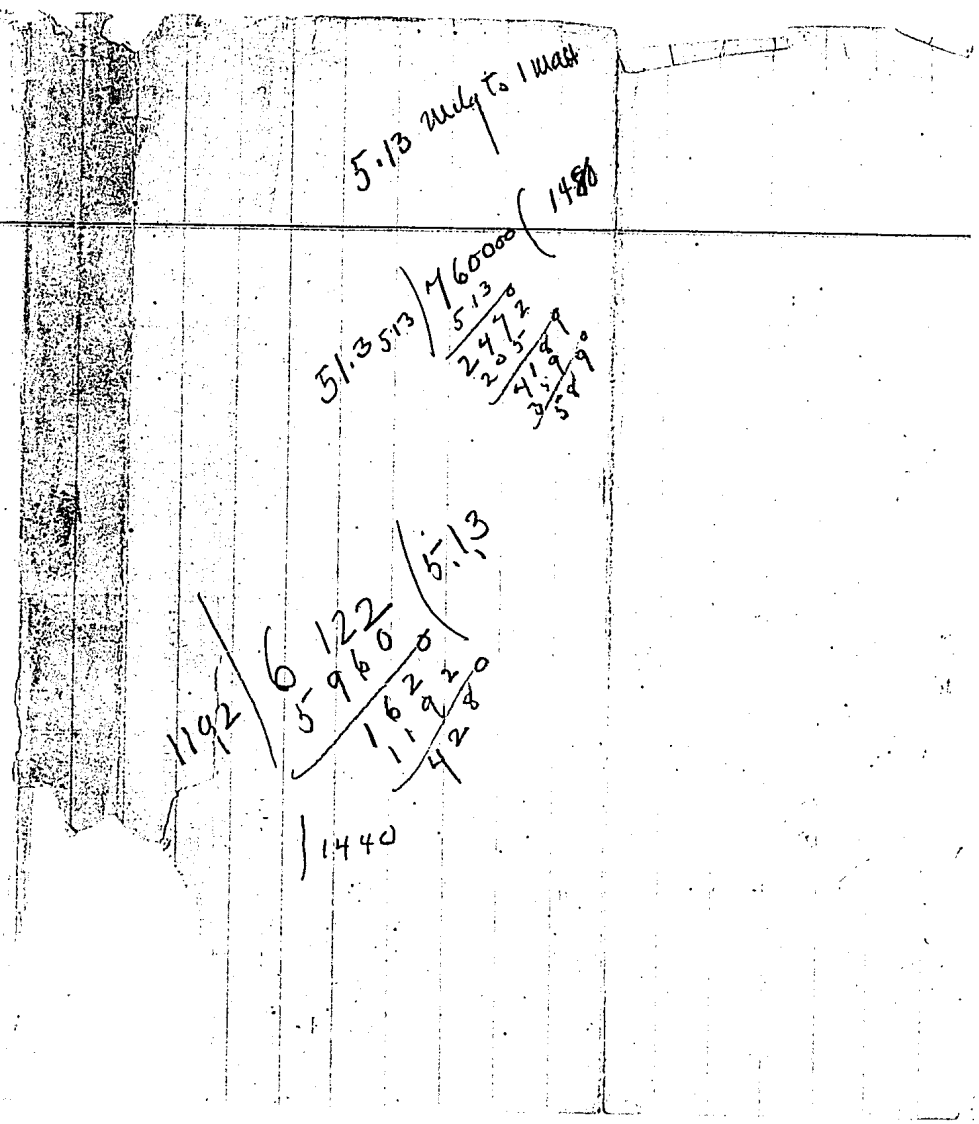
Voltage averaged 1.116 on these tests.

The volt curve did not drop straight down from 1V to .5V but had a tail, showing, I think, that the Fe gave out first because it did not get fully charged. The tube which is in front of the Fe would naturally shunt some of the charging current.

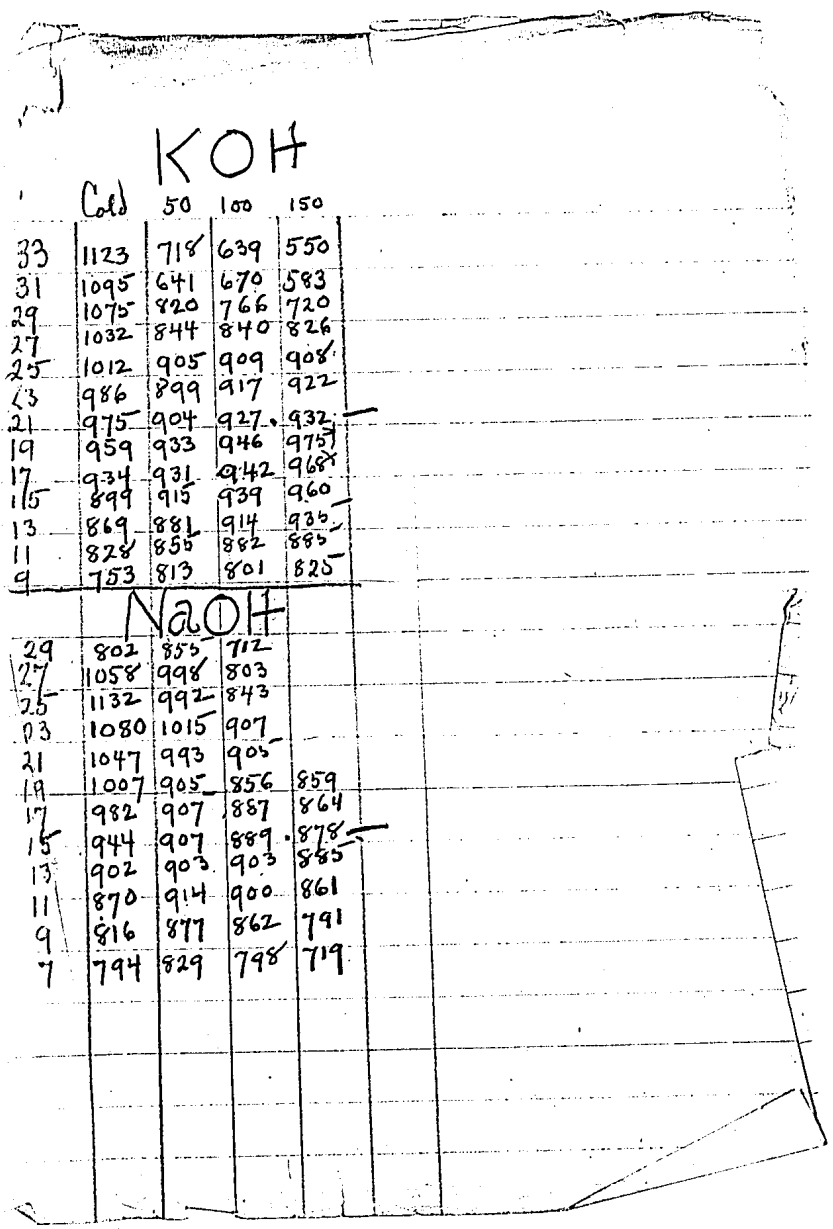
Will now try these for holding their charge and then will reverse the polarity and see what happens.

W. E.

[ITEM(S) FOUND IN BOOK]



[ITEM(S) FOUND IN BOOK]



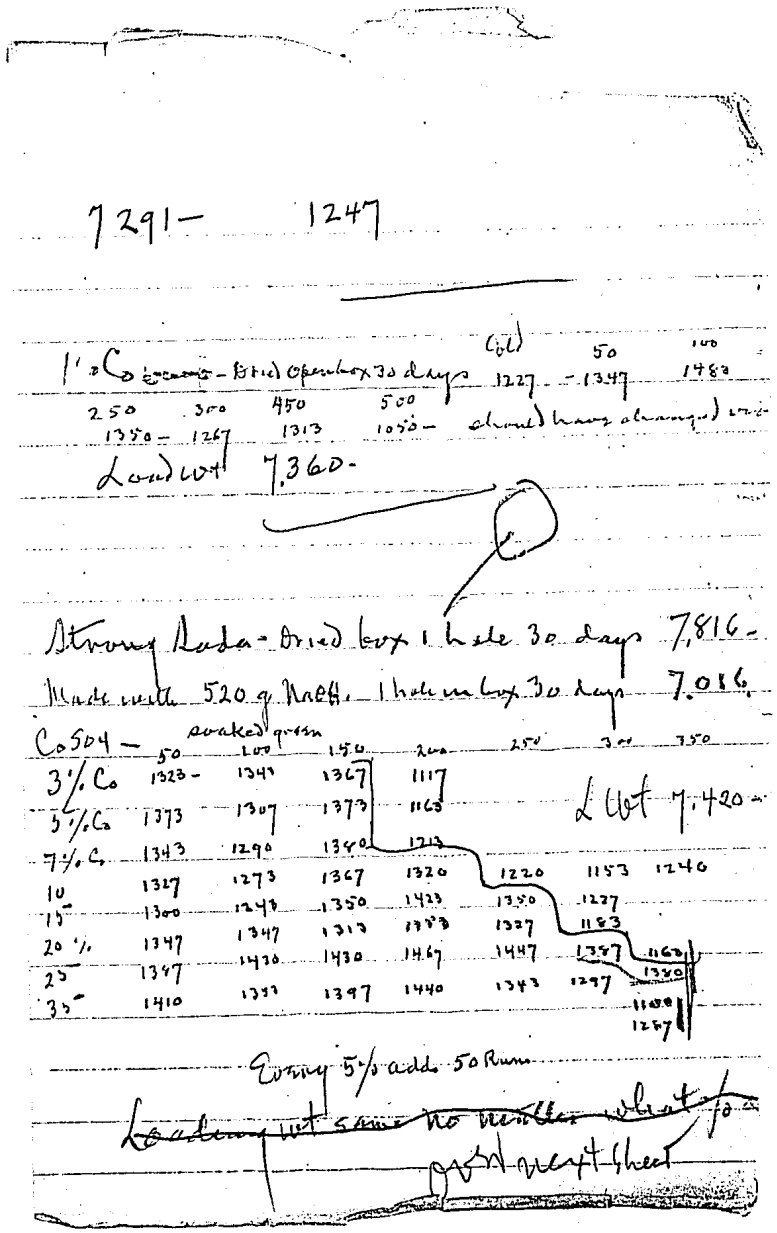
KOH

	Cold	50	100	150
33	1123	718	639	550
31	1095	641	670	583
29	1075	820	766	720
27	1032	844	840	826
25	1012	905	909	908
23	986	899	917	922
21	975	904	927	932
19	959	933	946	975
17	934	931	942	968
15	899	915	939	960
13	869	881	914	935
11	828	855	882	885
9	753	813	801	825

NaOH

29	802	855	712	
27	1058	998	803	
25	1132	992	843	
23	1080	1015	907	
21	1047	993	905	
19	1007	905	856	859
17	982	907	887	864
15	944	907	889	878
13	902	903	903	885
11	870	914	900	861
9	816	877	862	791
7	794	829	798	719

[ITEM(S) FOUND IN BOOK]



7291- 1247

1% Co [illegible] - Dried Open box 30 days (6l) 1227 - 50 1347 100 1483

250 300 450 500

1350 - 1267 1313 1050 - almost hard almost [illegible]

Load lot 7,360-

Strong Rasta - Dried box 1 hole 30 days 7,816-

Made with 520 g. MgSO4 - 1 hole in box 30 days 7,016-

CoSO4 - soaked grain

	50	100	150	200	250	300	350
3% Co	1323 -	1341	1367	1117			
5% Co	1373	1307	1373	1163			
7½% Co	1343	1290	1340	1213			
10	1327	1273	1367	1320	1220	1153	1240
15	1300	1243	1350	1423	1350	1227	
20 %	1347	1347	1313	1393	1327	1153	
25	1347	1430	1430	1467	1447	1357	1163
35	1410	1351	1397	1440	1343	1297	1350
							1100
							1257

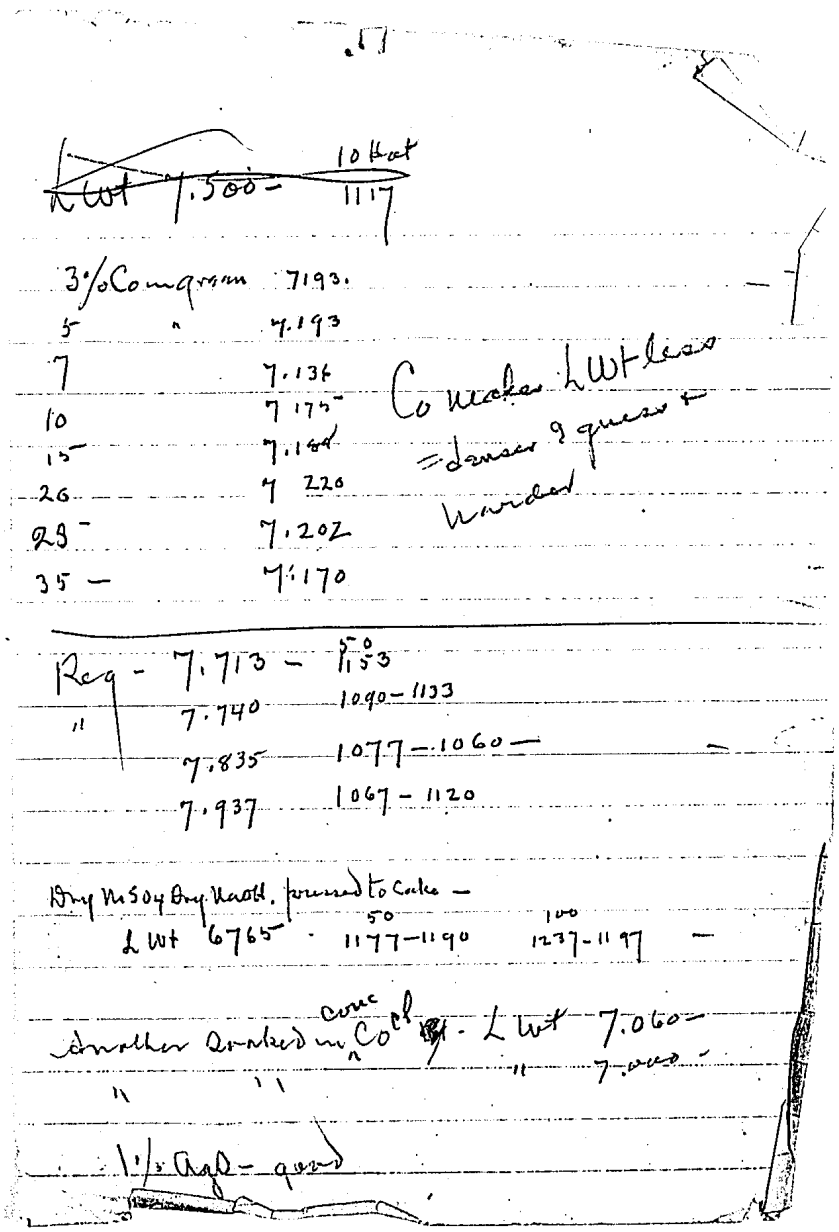
Load lot 7,420-

Every 5% add 50 Rum

Load lot same no matter what %

[illegible] weight sheet

[ITEM(S) FOUND IN BOOK]



~~R Wt 7.500 –~~ 10 Hat 1117

3% Comgrain 7193.

5 " 7.193

7 7.136

10 7.175 Co mades LWt less

15 7.164 = dense & queer

20 7.220 discarded

25 7.202

35 7.170

Reg - 7.713 – 50 1153

11 7.740 1090 – 1133

7.835 1077 – 1060 –

7.937 1067 – 1120

Dry MS04 Dry Mash. ground to Cake –

L Wt 6765 · 50 1177 – 1190 100 1237 – 1197 –

Another Graded in Conc Cob By · L Wt 7.060 –

11 11 11 7 accs –

1/2 Agl – good

Notebook Series -- Notebooks by Edison
Notebook, N-14-01-01.2

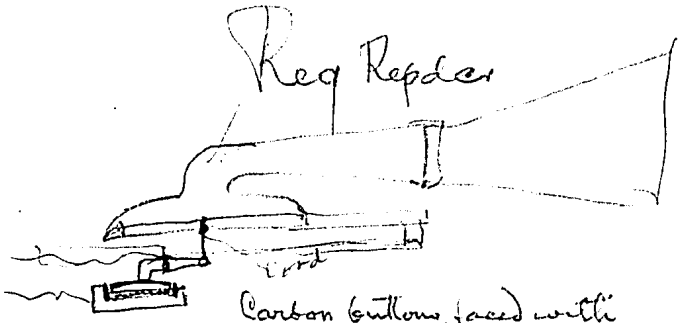
This notebook was used by Edison during the periods January-March 1914 and October 1916, partly at his West Orange laboratory and partly at his winter home in Fort Myers, Florida. The entries from 1914 pertain primarily to sound recording and amplification. Included are notes on modifications to musical instruments, phonograph horns, recording diaphragms, and reproducers, as well as notes on various chalk telephone and electromotograph devices to try in connection with recording. Also included are references to works by Herman von Helmholtz, Lord Rayleigh, John Tyndall, and other authorities on acoustics. One drawing involves studio arrangements for making kinetophone films and recordings. Another suggests making a hearing apparatus for the deaf. The entries from 1916 relate to Edison's research for the U.S. Navy during World War I. Included are notes that propose methods for detecting battleships and submarines, taking infrared photographs, and cooling machine guns. Other entries pertain to trench warfare, combating chemical warfare, bombs, air reconnaissance, inter-ship communication, and possible means for disabling submarine periscopes. The front cover is marked "Telephone Recording Navy." The pages are unnumbered. Approximately 135 pages have been used.

Jany 1 1914

Recording on phonos
by interposing telephone
& other Expts on

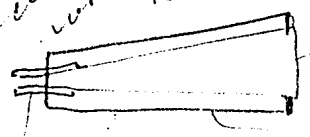
Jany 1 1914

Reg Reader

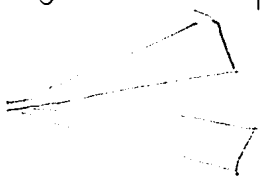


Carbon buttons, faced with Lampblack, also Chamber fume fakers buttons. Fakers coated Lampblack

Jany 1 1914



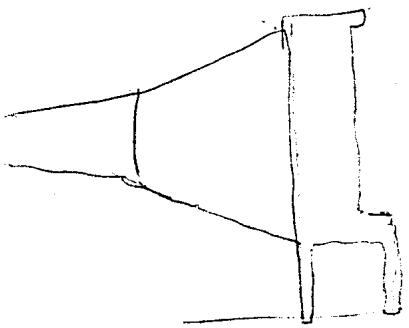
glass collar screwed tight —
or neat Cement - very fine & pumped
against a highly packed heartwood



Note
2 ft & 4 ft
funnels

Note of Long funnel
Less shrinkage —

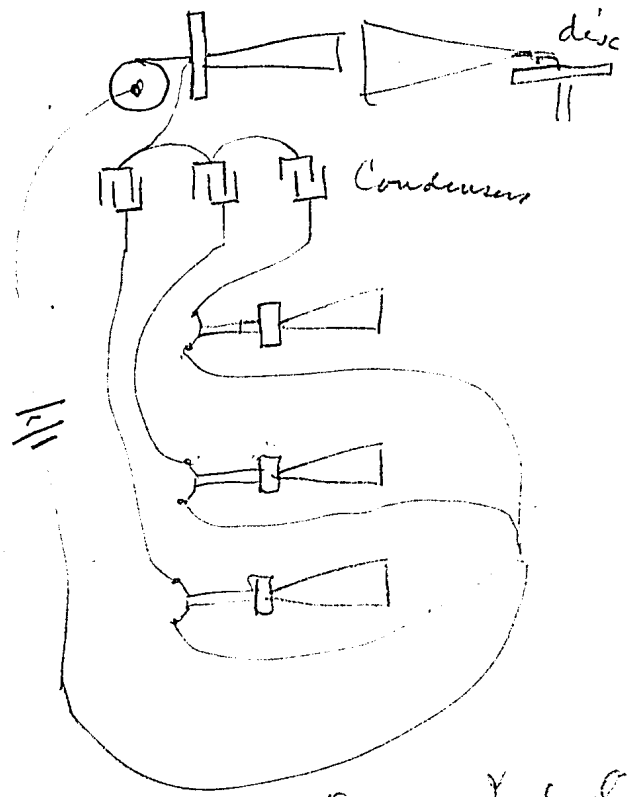
Jany 1 1914



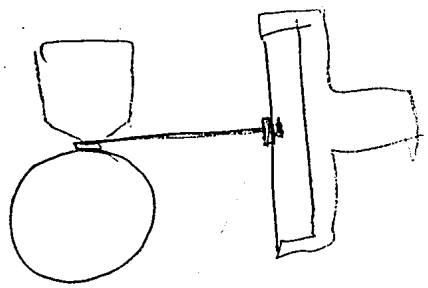
upright piano
funnel to cone
at back mounted
of the board
& closed front

To prevent doubles

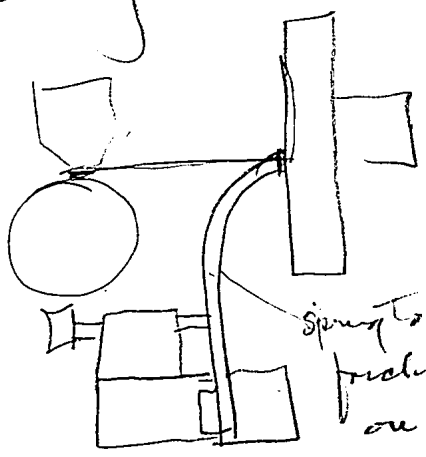
put felt on hammer on
Reg hammer lake
on hopping machine
of Model Lake —



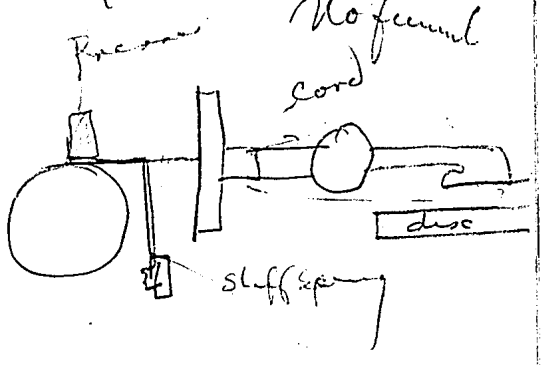
Or use Induction Coil -

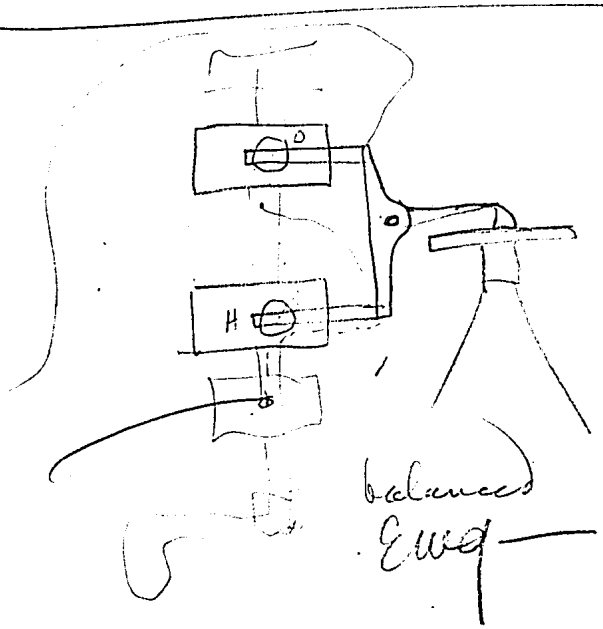


felt connection to
Dia or equivalent to
String



Jany 1 1914





4 | 72 -
18 -

20

180 -

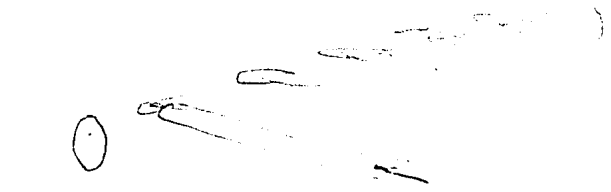
60 | 72 (12
60 0
12

12 sec

60 | 72 (12
60 0
12

1.2 sec heart
12 seconds breathe
6 ½ breath

Jany 1 1914



Cant a flute be made that would get rid of our pounded at hole - + be flow from Compressed air - use Compressed air a Central air tube, or a slit by lips

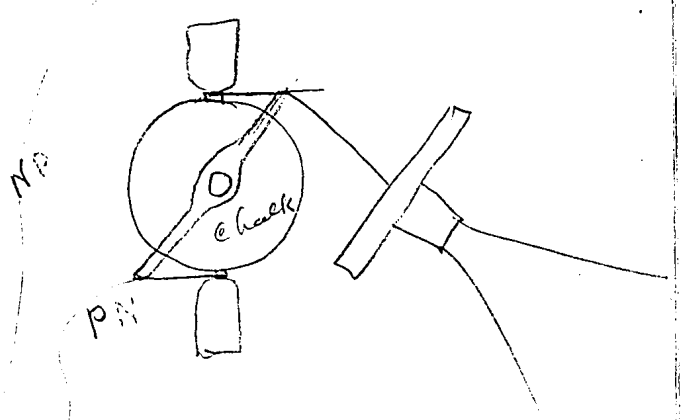
Tremolo is produced by the unequal strength of Vocal Chords or Edges one 256 other 259 - result 3 beats - try Equal pressure thro' out on a Vocal Compass

Jany 1 1914

Tunnel notes

64 V.6 sec	105	
128 "	52.5	4.37
256 "	26.25	2.181
512	13.125	1.19
1024	6.562	
2048	3 281	
4096	1.64	
8192	0.82	
	0.41	

If a violin played
accompanied by a Violin
1 Octave higher or
from less (beats would
not be heard) they
Cease to be heard at 120 difference

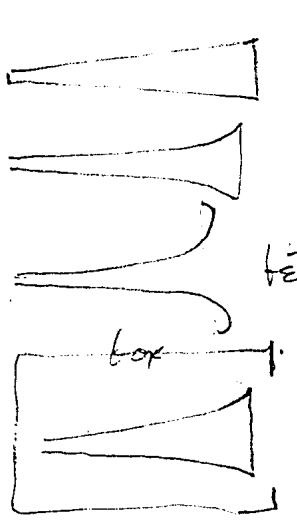


Possibly double resistance will not increase values –

If So – then can connect

Multiple

In funnels of all kinds the sudden letting out of wave at sharp edge of funnel is back- a new ~~eddy~~ whirl is set up- it tends to sharpen waves & also to cause the whirl to give an extra wave to those in front

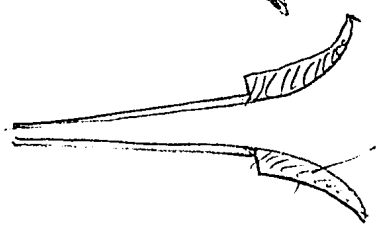


June 2 1914

Probably

felt.

would be good



felt may be spent.

This would let waves pass Common every softly —

Probable

Velocity sound eqn of the distance
only applies to outdoors
in closed hall where
constrained its diversity
means loss of heat or
friction —

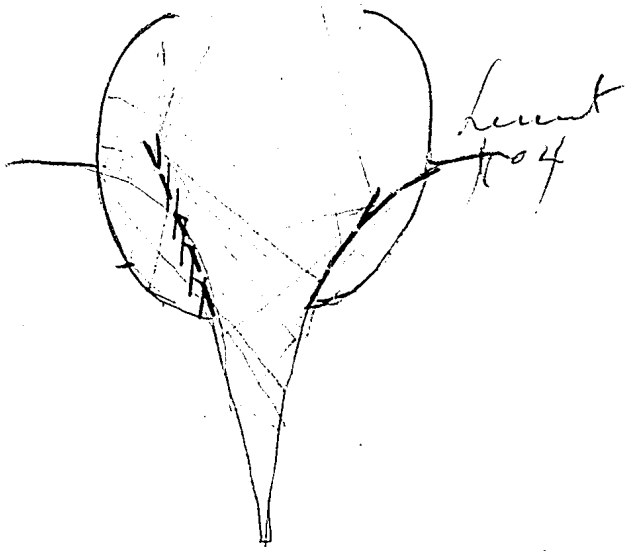
To find natural tone
of a room, sound the
scale or equivalent.
Recording room with
all appliances should
have their natural
tone recorded

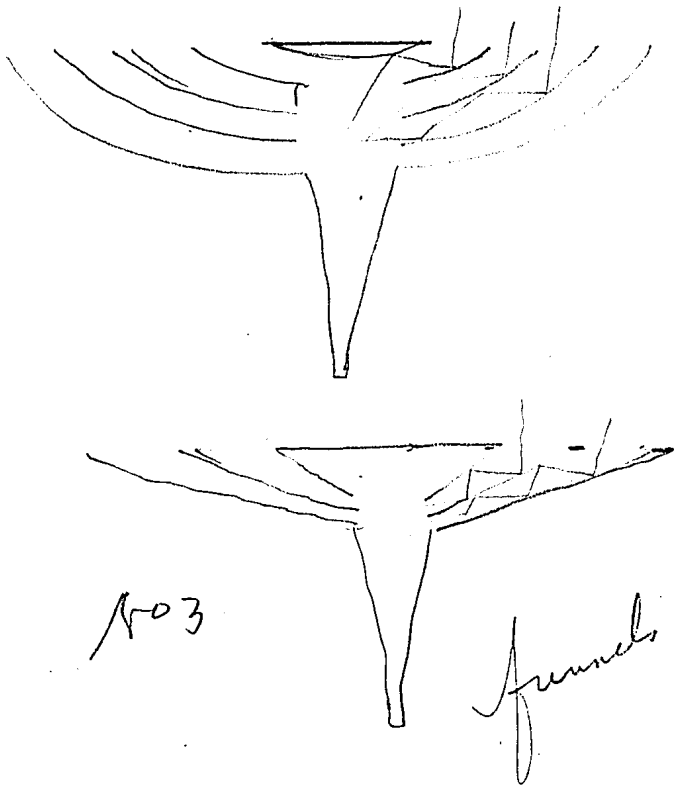
Raleigh say Vol II. p 68
ft note

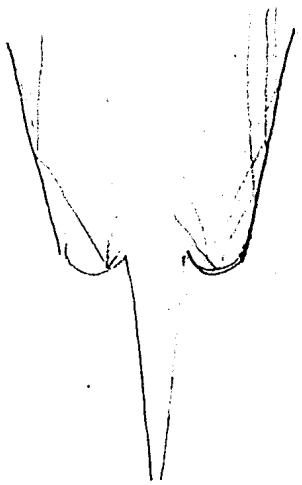
I have underground passage
4 wide 6½ high - by singing
right note to excite vibrations
I obtain free vibrations of
many seconds duration
& often happen the
resonant note is
affected with distinct
BEATS.

See Raleigh Vol II
Page 102 Funnels
Very powerful

Raleigh says a hoop
Membranes is stretched on both sides
by sound waves on this
membrane ~~was~~ is sensitive but
if its big enough for wave length
to form a shadow. its sensitive
perhaps our Dia recorder
should have a shield for
low notes-

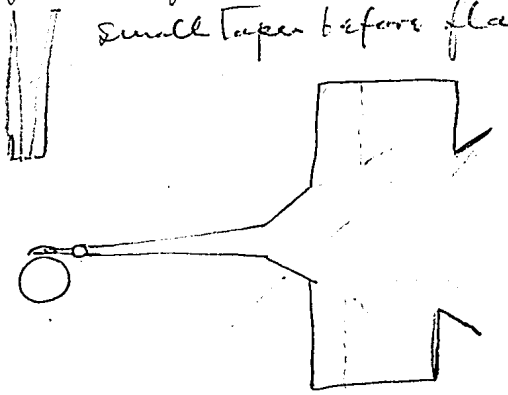






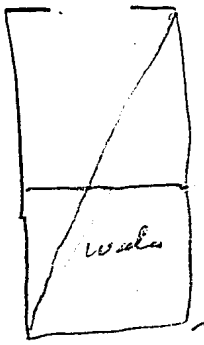
get glass funnels

small Taper before flare



Sven Chamber Manhegan

Resonator of this is Middle C

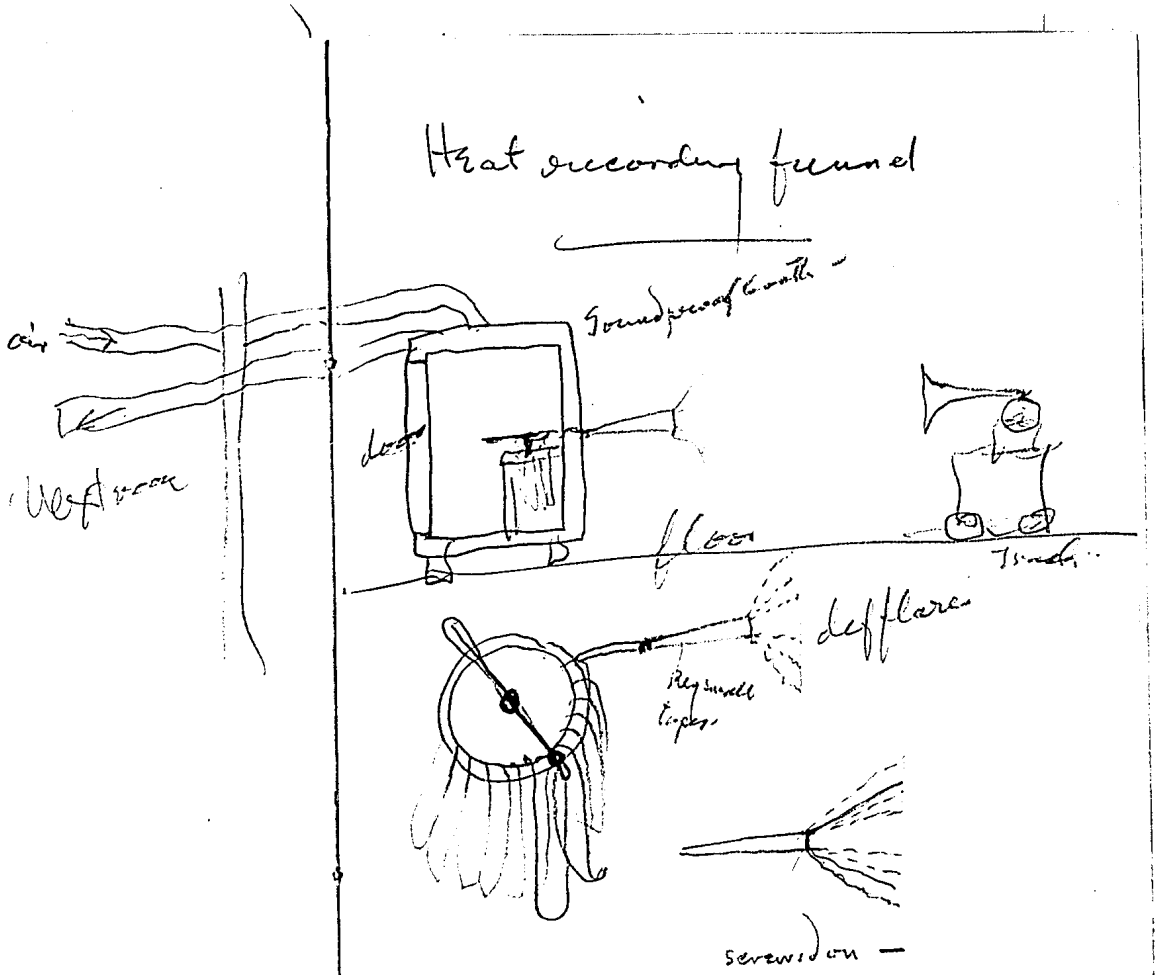


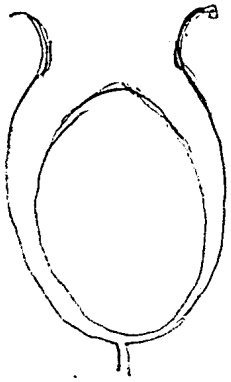
pitch not altered by moving the Resonator

It depends on The Volume mainly & moving does not Change the Volume

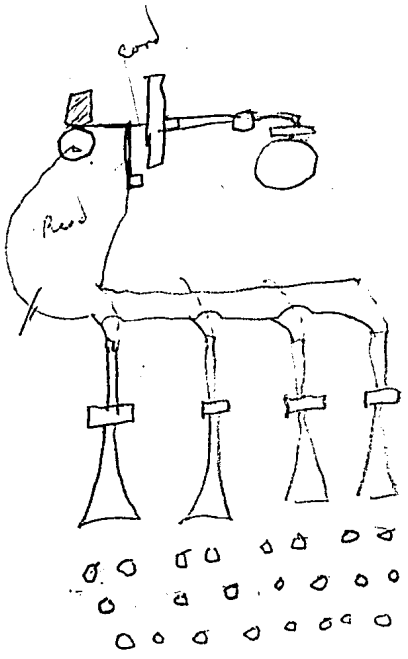
For substitute for celluloid
Insulation -

Make semi hard rub -
Pure Para - Sulphur +
Load with pure
Paraffine -
+ Vulcanize -


Heat recording funnel
air
Soundproof Earth
Reflector
Reflector
Reflectors
Reynolds Tapes
Television



In winding magnets
use the accelerating coil mechanism
to give less retardation —
or other modification, better
Remember our old Induction
Coils Spark depended on modification

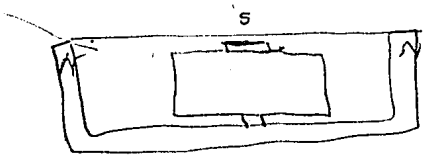


also accelerating —

Retardation when
damper

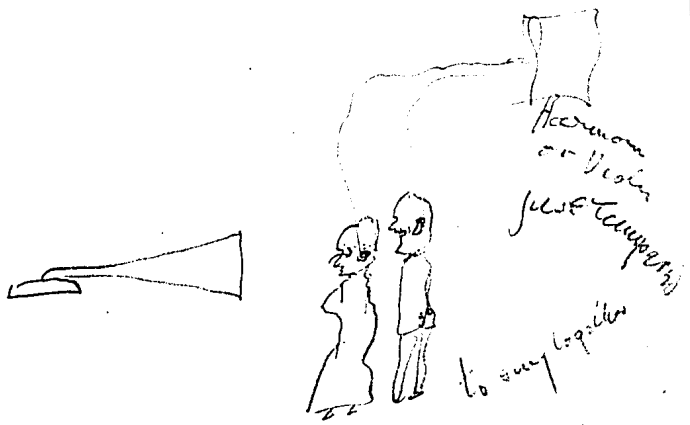
also Carbon transmitter

best Thing



NOTE

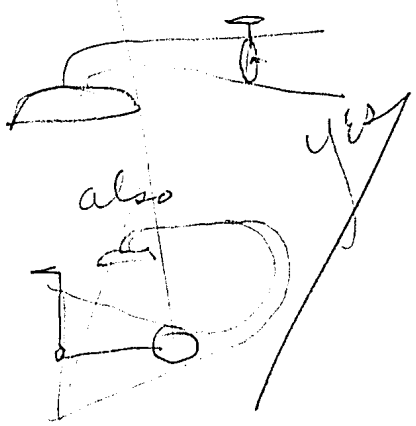
Diaphrms fastened at Edges, the Sound box must be same Coef of Expansion to get even results



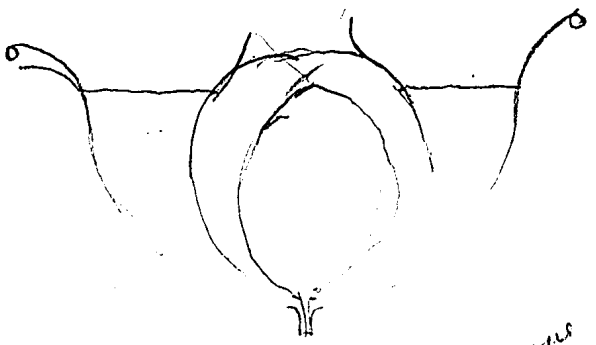
Diaphrms with fixed Edges

Cupric Cellulose
Infusible Condensate
Condensite Dust Vapour
Leather - same coef of 6/4
Nitrocellulose - Celluloid
Viscose - Glass, Mica Selenite K
Electrolytic Iron Ni Fe Cu Co
Ag Al Zn Cd Sb
Oriental Crepe - Silk
Shellac Bd - Japan paper
Gelatin - Casein
German Silver - Metals Langer Dia

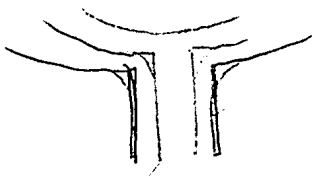
Did I patent /



Use taper like small part Ring found

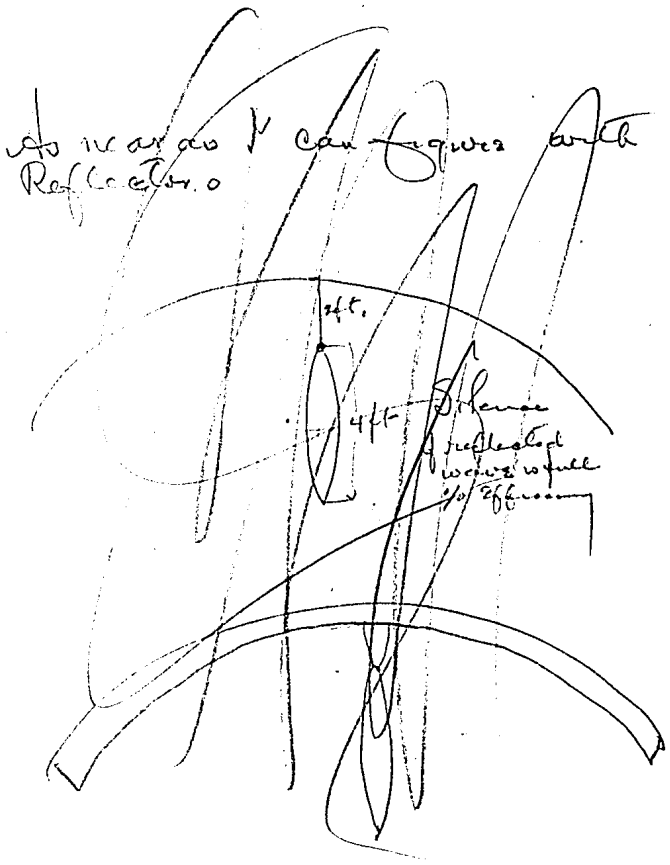


Possibly only one

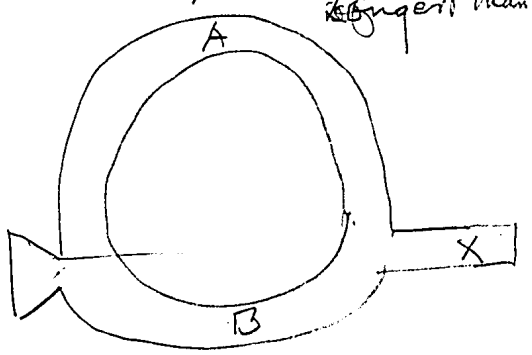


500/1000

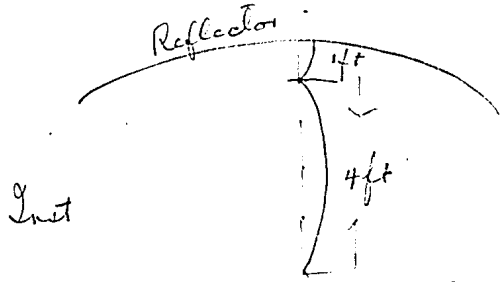
350/1000



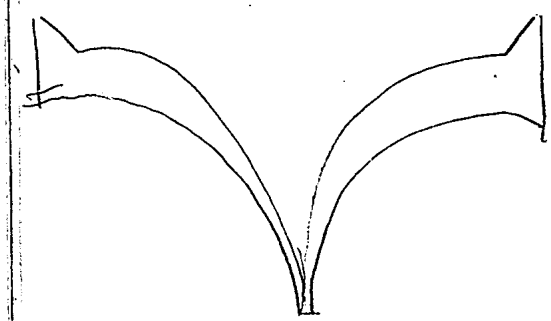
A 1/2 wave length longer than

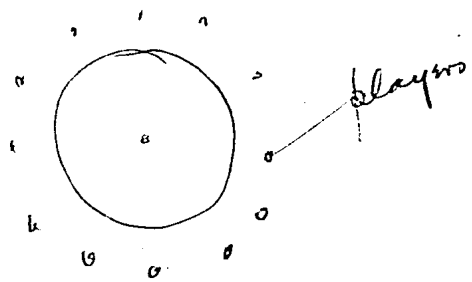


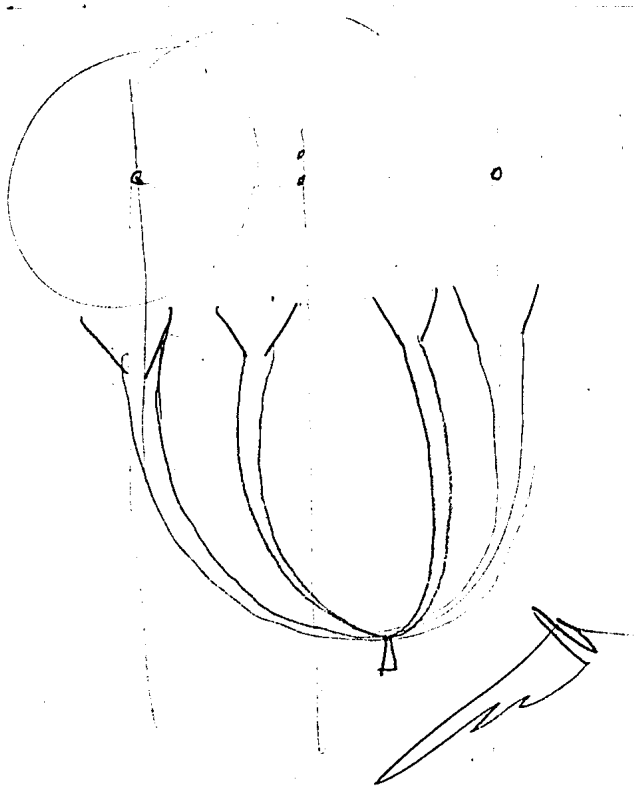
No Sound heard at X



If 2 4 or reflector from
distance 1/2 wave length
get Silence — 1/4 W.L. or less — of 64 Vib Sec
~~Doublet~~







Try Cork dia fastened at Edges, think can use it 1/16 or 1/32 thick + plug holes with wax, Etc -

Test Chowdemans Wax records

Get his past tests, then go over all & pick out most attractive ones - purify all materials, filter good & then Turn & Knock for smoothness then rough & record with 100 thread & Reproduce to get ocean Electrical qualities, sticky surface Etc

Check Telephone
Look up in Note books past ideas on this subject

Jyndall Sound '19-

from Chloride Ca with Carbonate Na use of get firmer Carbonate than by precipitation,

Get up good floating Scheme to dejelatinate or Mercuric Iodide & get it liquefied & Clear —

The strength of sound depends upon the density of the air in which the sound is generated hence in a steel chamber under air pressure! We could get much louder records
Cold room best for recording

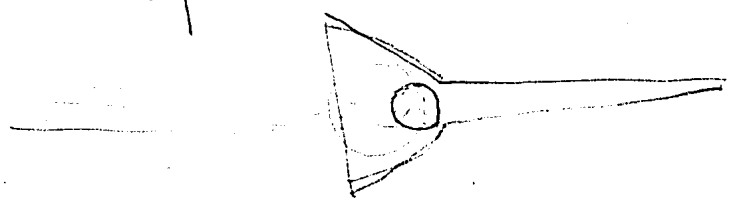
Phono

focus

Rubber balloon

Wooden

The sound wave is retained in back part of balloon hence sound; produces a focus —



Replace with the wood ball in $2.50 Duo Con [illegible] focus — larger ball + Cotton.

Try Sulphate Na &
Sulphate Magnesia & only
Na Cl. — probably get
Ox Mag Ving fund —

Oxides of Fe. Ni Cd Cu
Sb. Col

Try Lithia Carbonate & only
use water on chalk

Or Mixtures of Sr & Li Carbonate
precipitated together or
by fusion —

Perhaps KOH dissolved
in Glycerine used work
for working Eng chalks

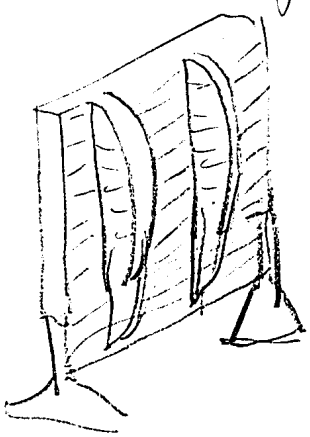
Harmonics increase in power
in a piano the harder the felt.
with hard body the fourth
partial is 3 or 4 times
louder than the fundamental

Tyndal 122 pages

Get Lifer or make up
Whetstone or Lubricant
Lets work on Ground

The Chalk for Eng
probably must be
Anhydrous. Treat
in Water or KOH

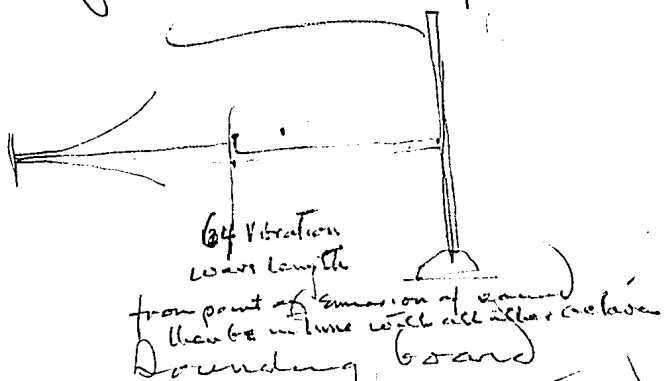
for sound reflection
Use Cast glass —



Etc —

Also — Sound board
with felt shutters on face so
it can in 1 second be turned
to use a reflecting board
to an absorbing no reflecty
board — a Conductor note
sounded with sustained
shutter will show change
of quality Compressively + leads to results

Expert with singing
the Violin playing the
Melody except on some
songs —
Cello + another Instrument
may have to play
def — or accompt —



Sounding board
must be picked in a Tuned
position.

The outer Channel of the
Ear resounds to
Notes of a Count
3000 per Second
Dogs which hears to
Music are particularly
Reaching to 3000 per
Second —

Look out for d
perhaps its the
Sensor Company
+ not the Country
or both —

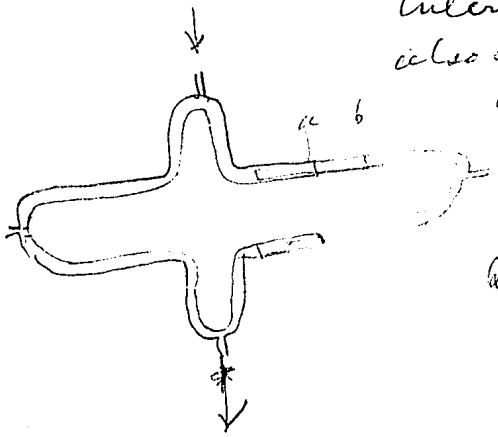
Wheatstone says only way to [illegible] a piano Sound Board is to place [illegible] bridge. + midway to treble + wire rod 1/10" dia or [illegible] rod 1/2 to 5/8 dia,

Record with which it was done —

Buy an old piano 50 to get the Sound board —

Make this —

Tyndal 261 —



interference when a minimum

Centers

1

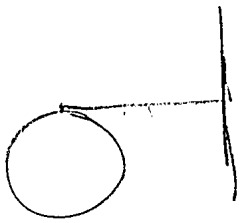
see details

Send for Longs Catalogue —

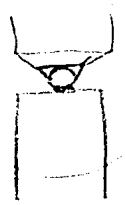
Chart [illegible]

Sizes

If we use hard Carbon in Transmitter with Duo replay it will have very little movement hence the Diaphm may have to be made larger diam to Exchange Amplitude for power If 4" used with set 4 times the previous & 1/2 the amplitude but of Lamp Black used perhaps present leverage & diaphm will suffice

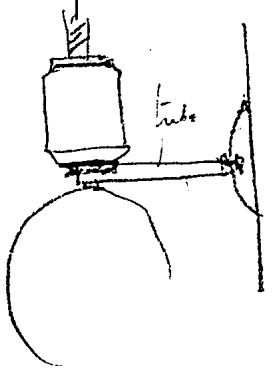


Thank Pin shaped for tube to stop bending

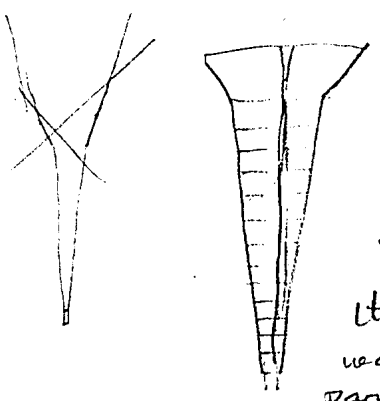


Should use a diamond tool to turn with very fine feed '2000 to inch — for Chalks

Diaphm should have a Cone

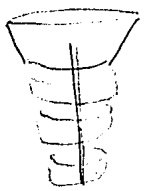


Thank Aluminum or Thin steel or perhaps glass



Thread by using that funnel will become partially to warp

Make funnel Cut up in such lengths. Then put together so 003 spacing between each section



solder strip

supported Column of [illegible] + reinforce coupling

perhaps a lapped wound with flat band do same thing

Leak where band Edges Come

Apparently should have cartridge joints on phones work expectancy near recorder as a leak makes the long funnel - at that point responsible - may subject to any to the high notes for just same a leak 1/6 inch from the diaphram well reinforce the 4th overlap of Middle C 3 of C'' 2nd of C''' + 1st overlap of 2048 C''''

Hunt up 2 or 3 old Enclosed Rubber Chalk telephones used in England for test of Length - time chalks used to measure OK a operate

Looking up old book find $SrCO_3$ 12 hours in Water 3/4 Hr Nitric in chemical washing - remark that typings used thumb test 2 for 3 drops

---

Try in Mounting Chalks to dampen with Various liquids,

Water -
" a glycerine.
" a KOH
" NaOH
" LiOH.

Try making a chalk of Mixtures of Ba Sr Ca Carbonates —

In my old book I speak of Tungstic acid as better for Chalks than $BaCO_3$ takes data KOH. & has low scratch Says $SrCO_3$ twice as loud as $BaCO_3$ or WO_3 —

Run Expts on WO_3 & Tungstates,

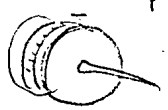
I found 200 clinks press on $SrCO_3$ best, for the sign of Cylinder chalk

Pneumatic on WO_3 Cylinders permits use of acids to wet, SS Thus big lead ! !

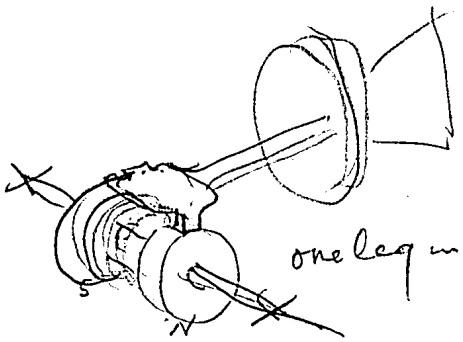
Try Mo_3 + CrO_3 Molybdate & Chromate - with acids - Sulphate Barium & precipitates the most in acids

Try arsenic & fluorides

Make Emq cylinders of metal
~~many~~ many of them
then coat with films,
acids & nitrocellulose
glues, fish glues, inorganic salts
& other. Lacquer & gums
of films — Shellac, Resin
Lacquer, Cleaners
Cellulose in Lacq, Thinners
Cellulose

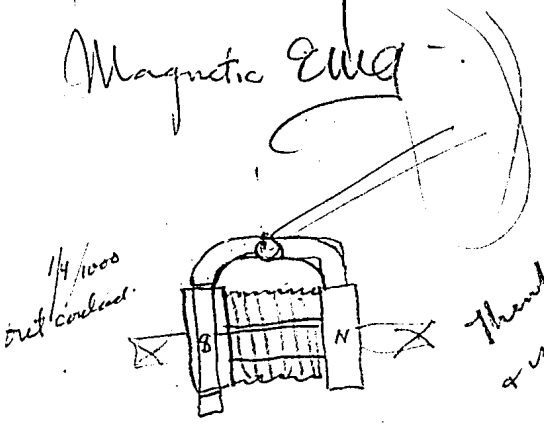


Metallic with 1/8 wide
plastic strip
then can put
strips of paper
between pen & this & marks
quick test of tolerances



Permanent mag

Magnetic Emq

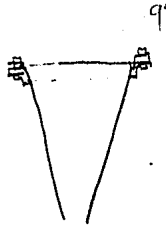


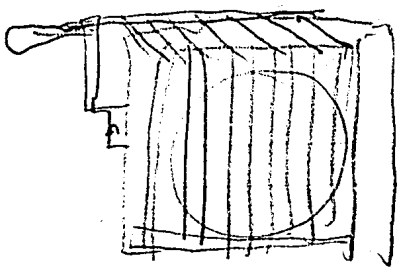
Emq - in theatre
Use the old Diz
Dia use wood
& put it under
great tension like
a piano, to get it
Rapid — S
1

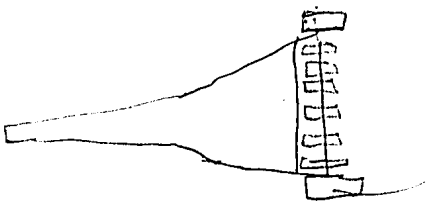
We always used Emq
Dia without tension
& they were dull &
flabby whereas under
great tension they
are as quick as the
Quartzoe ones

Get Reynaults works on
round of rubber
in England -
It has all the stuff in
& accurate
Drops in Ear Syringe (
Gold Beater Membrane
Shrunk at edges
is more sensitive than without

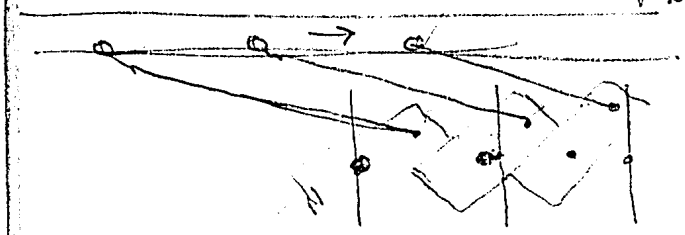
This is Contrary to my Expts
Try it



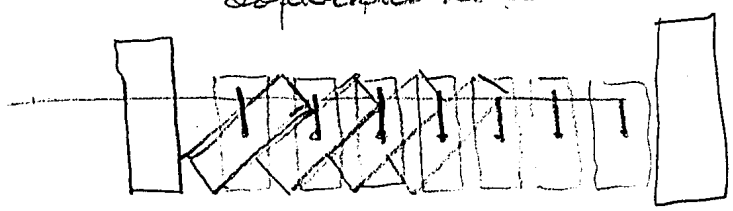


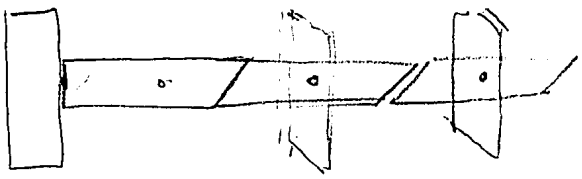


Thus can (by) on separate stand so not to Links — duplicate if necessary to adjusting

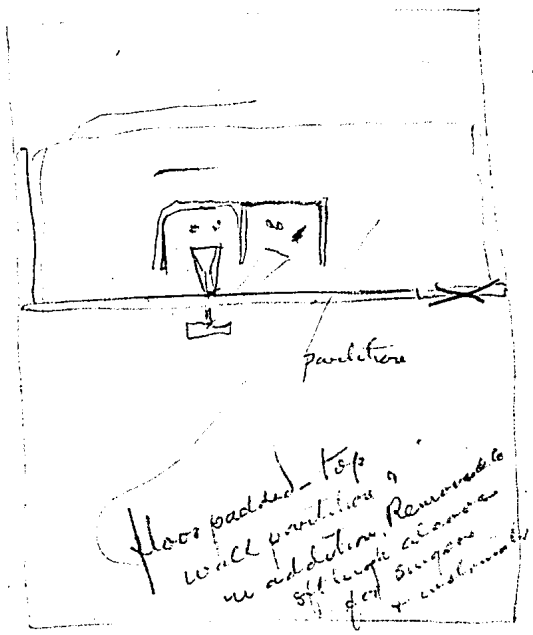


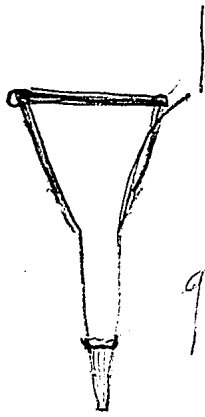
felt cloth shutter for modifying Volume of Opera sophisticated

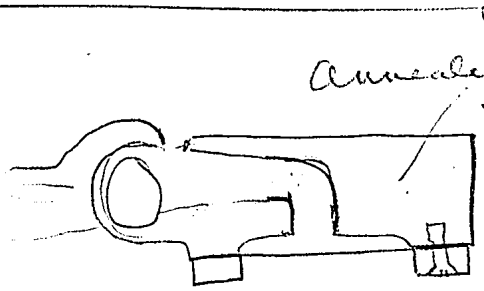




& so on felt about 1/4 thick Expt as to thickness







If aluminum aluminum used
Make box of aluminum
If steel use steel box

The Vic have no chatter marks -

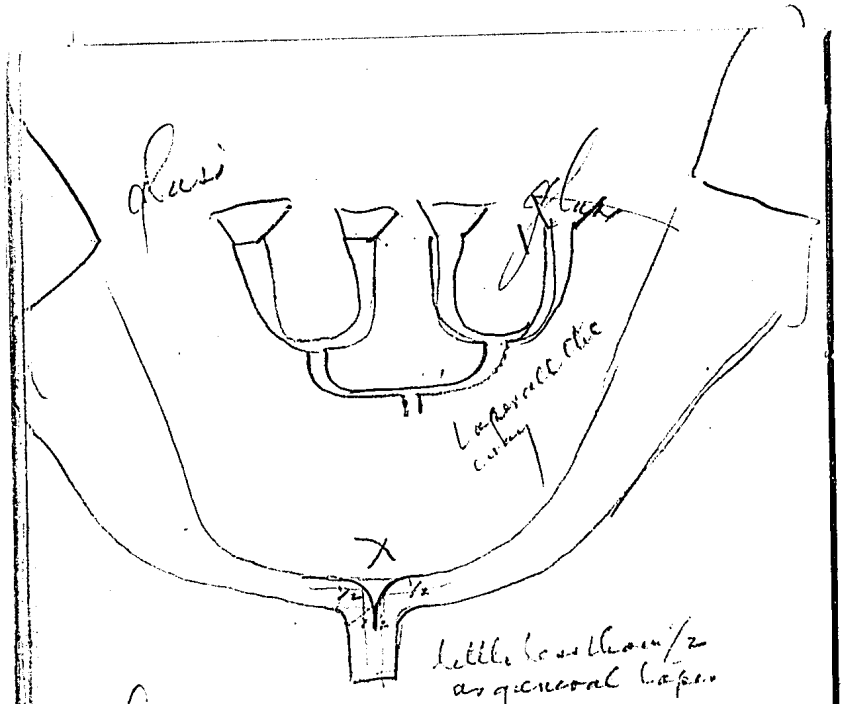
Suppose we try after record made in white wax to get a ball exact size of record temp say 1/2 or 1/4 smaller
Mount on original weight lightened to weight 1/2 oz -
Then add long spring on to give pressure -
Then start disc and run at very slow say 2 Revolution per min this will polish down Chatter marks & Bring perfectly no weight or Mass but only spring pressure & very slow it will not hurt top waves

Try grinding an Ivory Celluloid with Vienna lime

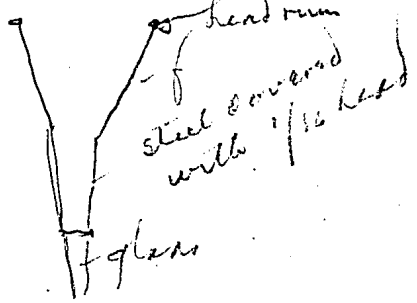
- Shew to myself Practical & Can be done -

Try dipping Celluloid Point of Ivory & Reg dip & remove -

also grafting a heavy the Ivory Celluloid of see of Clam & Cap bed point -



Think this better than Wedges as there is no Expansion at X to make a wheint + lose power



In case it is found that glass is best despite it will be necessary where fixed at Edge to make it longer in diameter This will reduce amplitude very much + only way is to increase the Knife hatching leverages. A glass box would probably have to be used or steel behaviour next to it on Expansion —

glass 00089 nearest,
Cast Iron 00100

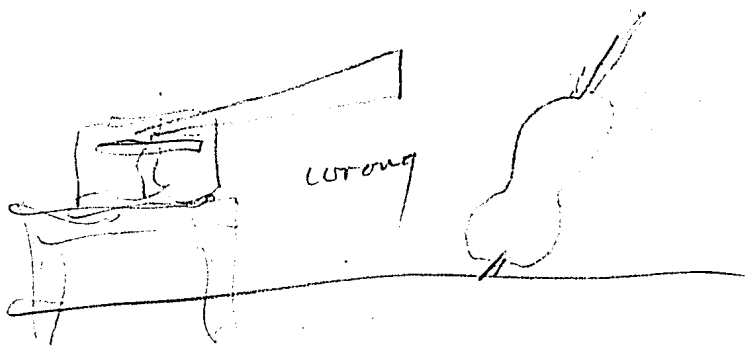
Steel box
Nickel Steel, Etc

Wood has 1/2 the Expansion of Iron glass,
Perhaps paper Tin good with wood box

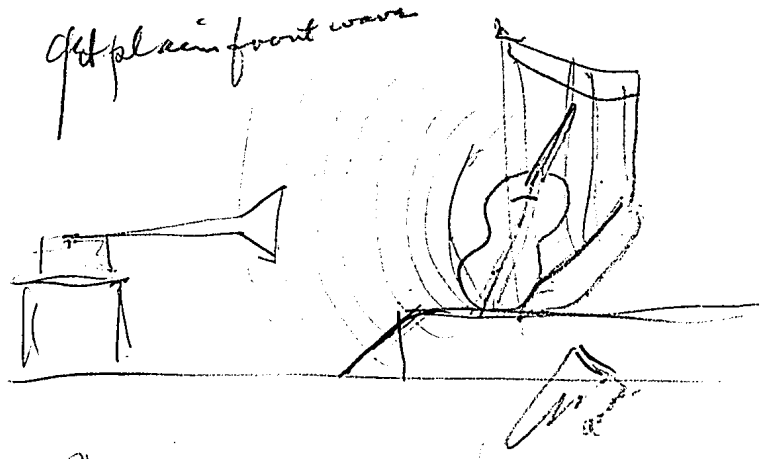
Porcelain less Expansion than anything — This is practical for a box

As I get the Elec action by rubbing fingers over X ray cards & also fingers over a metal —

Perhaps Canned porcelain or other fine grain porous paper and then coat Elec metal of platinum - Lithographic stone Cambric highly polished & straight edge —



get plain front wave



In piano the bass & overtones respond to the treble or high register is abnormally loud

Use tile lead on end of hammer as low as poss to get

The tools as if to raise the tone of low notes & diminish high it wants a larger clear more emotional tone the high & slow hammer to get full strong bear then in mind by fastening at Edge & check did it work limit vibrations for strong slow & Chopped high —

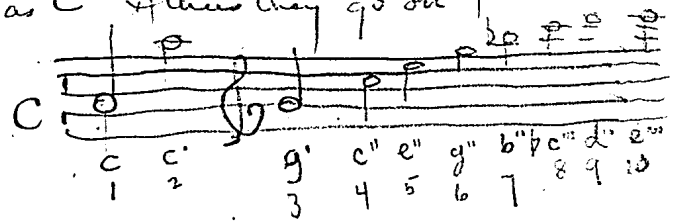
The 1st overtone is twice that of fundamental — If fundamental is Called C then the 2 overtone wave will be C'

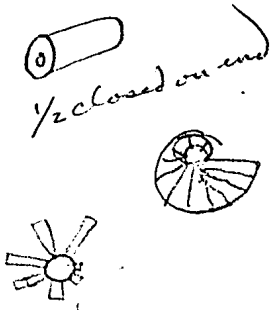
2nd overtone is the fifth of this octave or g' making three times as many vibrations as C

3rd overtone is the 2nd higher octave or C'' making 4 times the number of vibrations as C

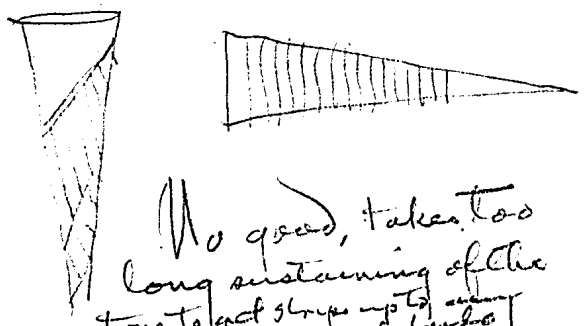
4th overtone is Major Third of the second higher octave or e'' having 5 times as many vibrations as C

5th overtone is the fifth of the 2nd higher octave or g'' making 6 times as many vibrations as C Then they go on





arranged to funnel
only a certain length –
as to strengthen vibrations
in voice & not the fundamental –
funnel for Contralto qualities
for soprano,



No good, takes too
long sustaining of the
tone to get strips up to
anticipation

Strip made of seperate sheets –
Capable each of vibrating seperately
& used & wound up to make a
funnel –
Some strips so in tune with every
note just entered set in motion
vibrations & quality

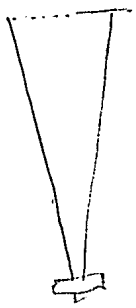
In above Connection only
can Column get quality of
Tone as more in detail –

With a fork the resonant
box the waves of the great
takes time, if one is only
1 vibrations why the depth

Hence no hope for tuned funnels
etc except with air Columns -
~~then there~~

Helmholtz page 67-
says a diaphragm connected to a
bottle 6" mouth 4" dia Long - Diaphragm 1.93 dia
rubber gives a certain fundamental
sound (C) so on tone with
C of same sound. Sand Grains
thrown to edges,
a 2nd circle showed .75 Each
dia -

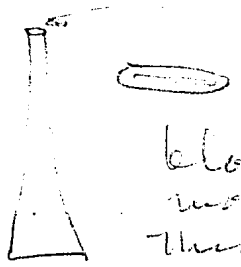
It may be we get some
bad notes when the
prime tone & over dia
is reached & that built up
Result up dia as the bad



Changing more towards the
mouth of the funnel
deepens more towards the
tone -

I think we could adjust
all our music by an
adjustment of expectations (also
they use on a Camera -
by this Diaphragm

To find tone of funnel
by Diaphragm



gives no
overtones
at all -

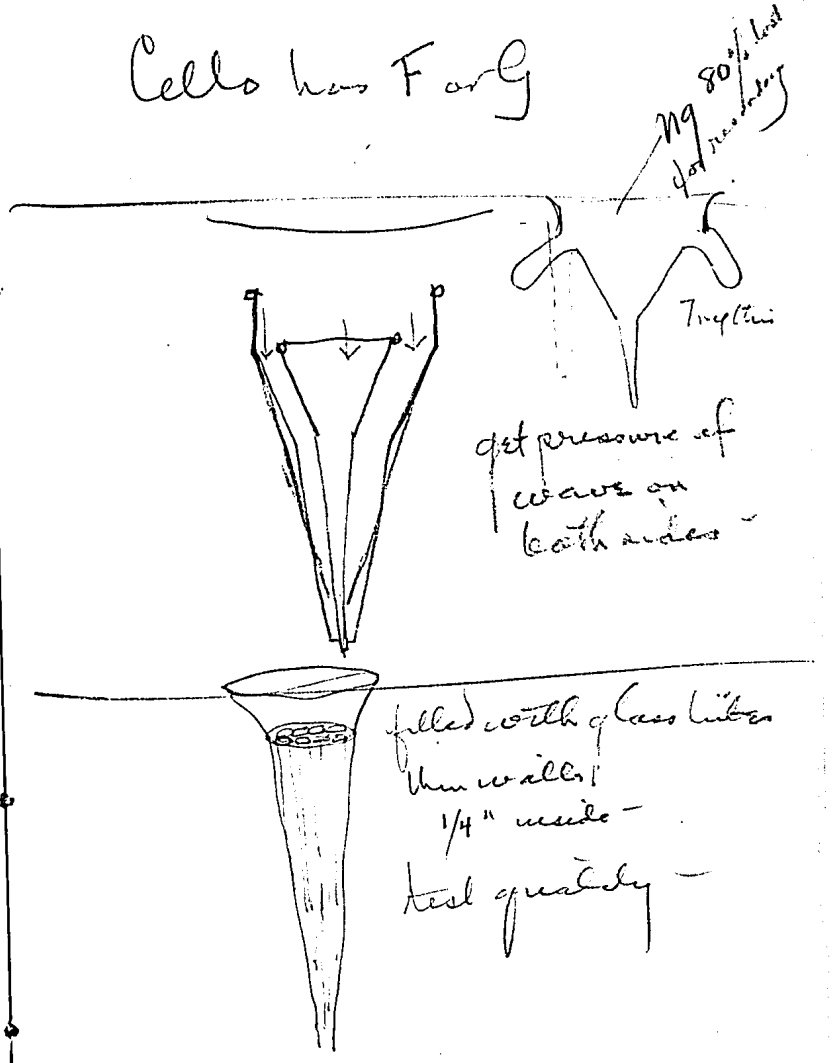
blow across
mouth
Thus gives

Helmholtz dampens Piano
string[s] to [illegible] wooden
with [illegible] and hair
brushes - perhaps several
[illegible] against a Damper which
[illegible] wooden [illegible]

Should try experiment of
loading hammers of
Piano with Lead the
amount of Lead increasing
as we go lower pitch -
to get more power and
not [illegible] strings which
are [illegible]

Helmholtz says all
Violins - have note
of [illegible] one an Octave
[illegible]
General C.
Walter Lockhart

Cello has F or G



perhaps when using a diaphm
fastened at Edges the
Diaphm should have greater
Coef of Expansion than box

then both heated to 150°Fah
+fastened. The Contraction of
dia would be greater than box
& it would be drum tight.
& wd would not be tracked
by due getting of Cabg
It would be less sensitive
at 60 than 70 Fahr
& than in box of which
temp Calculated to
get any Desirdoreness
Not required,

Cup & Diaphram Material

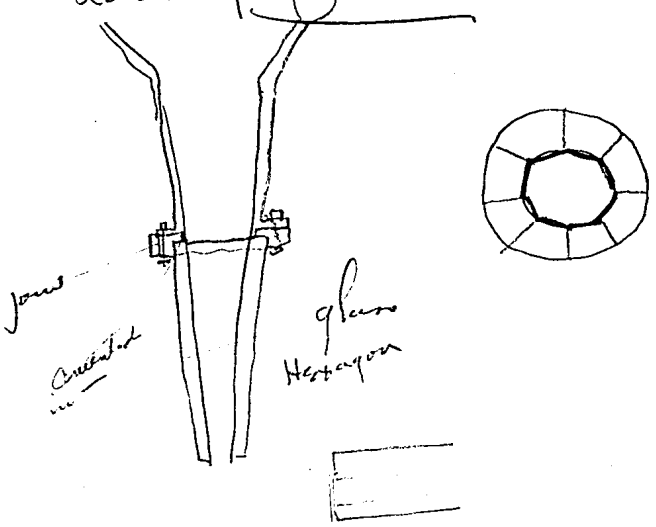
	Coef Expansion
Al Cast	·0022
Stl Cryst	·0011
Brass Cast	0017
Rolled Brass	0018
Copper	0015
Ebonite	0077
Flint Glass	0008
Iron Wrot	00116
" Cast	0010
Mg	0026
Ni	0012½
Pewter	0020
Porcelain	0003½
Silver	0019
Slate	0010
Steel	0011½
Zinc	0025
Zn 8 Sn 1	0026
Pine wood	00049

Looks like Steel or porcelain
and Zn Mg Al or Hard Rubber
Ag

Speculum Metal —

3 parts Copper 1 of Tin &
a little Ceramic Very Brittle,

Probably good for End of
Funnels but takes very fine
polish & Hands its anamorphisms
Look up further —



Possibly Hand Coal Tar pitch coated
with film dope having Camphor in
or not will deform under property
regulated heat & cool as
substitute for Celluloid Quick mounting
Possibly Other pitches also
Shellac melted with Trichp mallen
substances very sensitive to heat
perhaps can work direct with 1/8
Medium condensite —

It is probable that the
reason the other part of
a disc record is not so
clear & good as the Extra
fusion for the Knife due to
higher velocity of the
Workers cord Tones.
& also of course to Extra
Record —

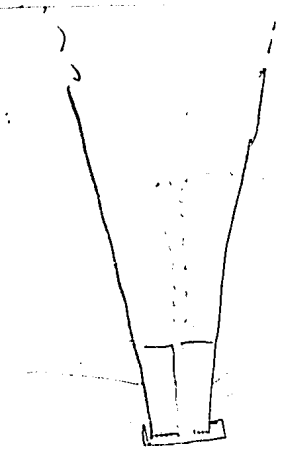
We should make so
Expts on the friction
of celluloid & copper
or dif Waxes —
Easy done —

Another cause for loss of high overtones is the pressure on the disc due to tracking. With the advance ball recorder the way that shrivels the Over the least to give normal tracking will be the most sensitive —

This can also be easily tested using a recorder suspended on knife edge the old weight with Counterbalanced as way keep it going by making Side weight with —

Some of the machine dyes may be soft wax + make them more susceptible, a large number of waxes

Make a test pure Stearine ~~with wax~~ as base



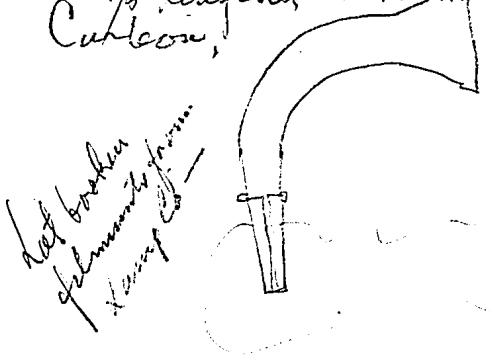
May need straight Carbon

No diaphragm —

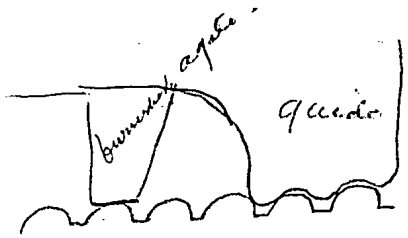
Right hand pressure

Split a la Jos's headstock + filled with Carbonized charcoal def mesh —

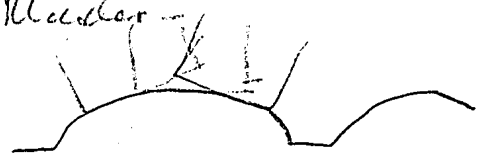
Sound waves compresses Use Carbonized thread cut in 1/8 lengths + various other Cutters,



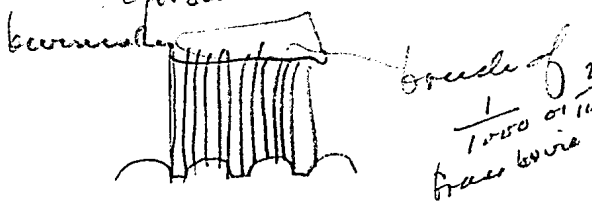
Nat brother Schmidt from Kemp Co —



To bamboo the Copper
or 2 Wooden



Gives movement to the



quite Quick -

I also regulating Wire (Brass Wound
Galvin with Brass +
Copper wire Brass
Rough or not,

1st Theory of bremalo is unequal tension of the 2 Vocal Chords

2nd Theory is vibration of the jaws throwing the air into Vibration 1 to 5 times seconds If middle C we get 256 Vibrations a ~~flow~~ a bremalo of 2 per second, the jaw Vibrates twice second - altering the resonant Cavity + varying Vol - or altering the waves into 128 twice —

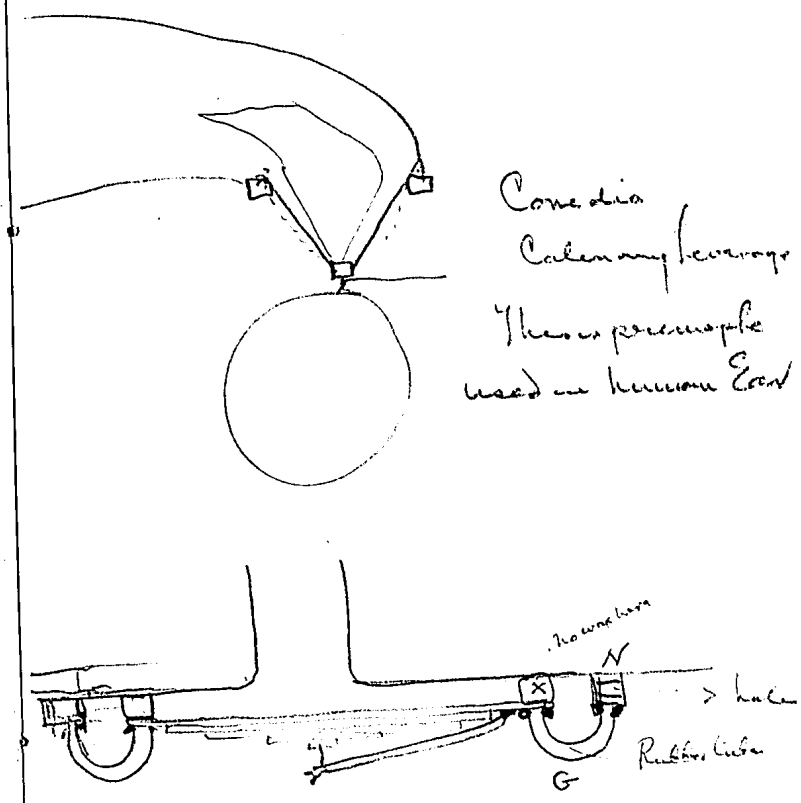
Hold the ~~jaw of a bremalo~~ engine + see if it stops

Try a song short + simple sung with A then E then I O + U, note notes that leave bremalo in Each song if detected then it must be Vibrations or Oral Cavity

Helmholtz Day Ear is tuned to notes between e'''' + g''''
produce a feeling of pain
In some Ears, if there is
any irritation which affect
this part of Ear its powerful

This is generally a case when
voice is strained + it gives
a screaming effect,

In powerful male voices
ringing forte sounds
like tinkling of small
Bells



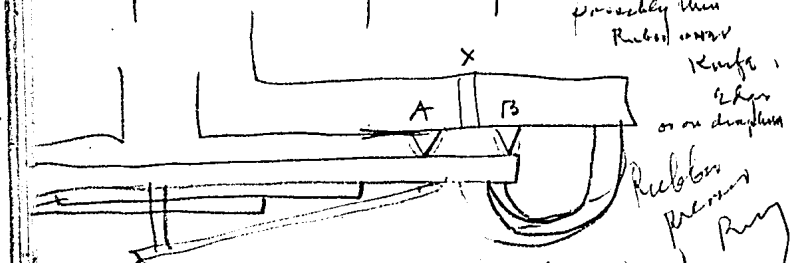
This kind of a clear movie recently
as a whole + about 1/4 inch
It held against a perfectly flat surface X
N is a ring on which other leg
G of a Rubber tube rests; this ring
has holes in

OVER

On weaver coming the diaphm goes down as a whole & the pressure against X makes a leak of pressure the escaping air passing thro hole in IV hence the amplitude is checked for high waves but not for low —

The rubber & disc must be carefully made & micro used in mfg.

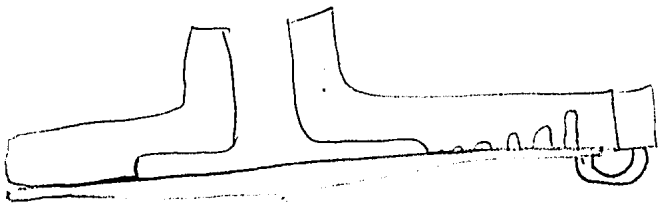
This idea can be worked up in many ways



probably thin Rubber under Knife edge on diaphm

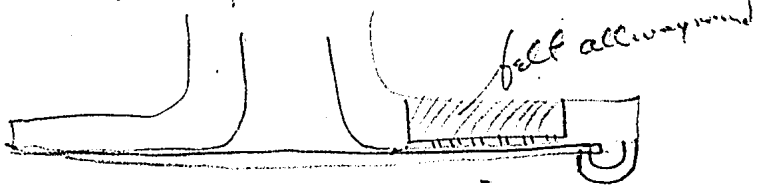
Rubber pressure Ring

Dia on two edges slight downward movement of disc it leaves A & is carried by B — thro Lets air into chamber but A+B & prevents out of holes X

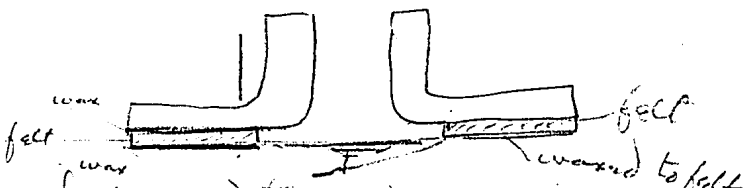


When it makes contact & Knife cutting a downward movement slightly of Cyl disc a open valve to a small groove around box & flows more Cyl Longer & less & on any thro Lowering disc

Note opening & Cover

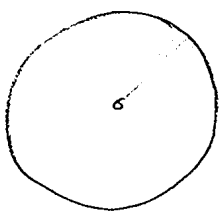


Another idea —



This makes a soft long lay 20 to 30% look through of felt ½" long —

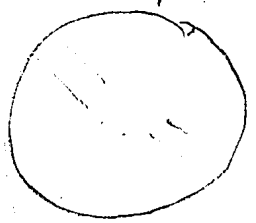
dia section of cup —



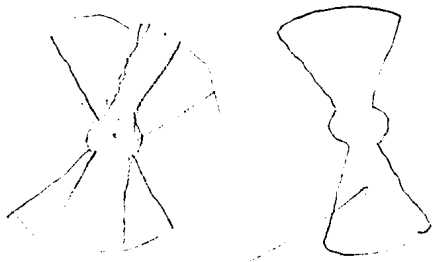
cut oblique by a razor to center + used in this

Pressure put upon this with split rubber tube

This principle can be carried out in many ways

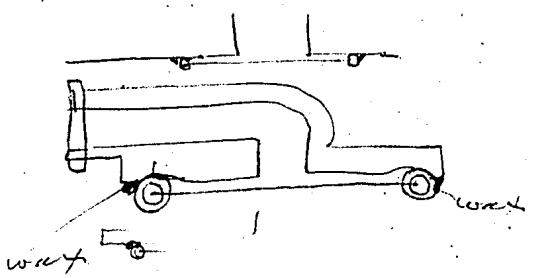


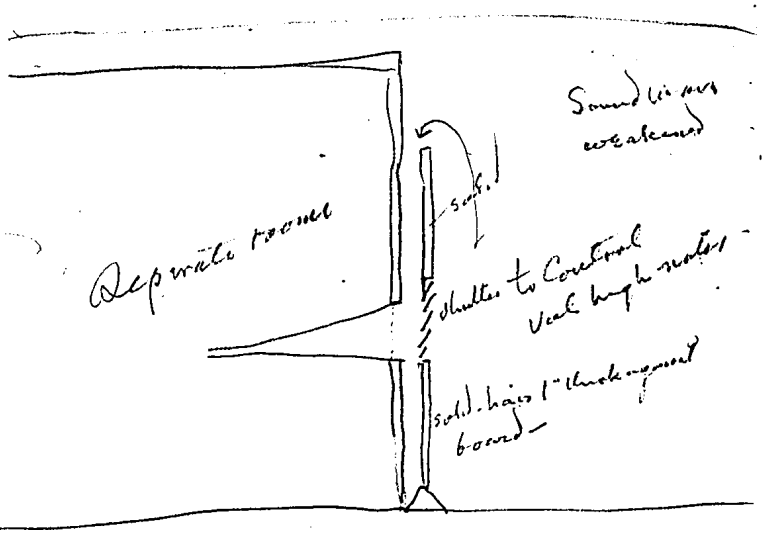
oblique cut



built up of sections like this paper, wire, etc.

While this looks good results are only due to ribbon & not to split diaphragm


wax
wax


Separate room
Sound waves
Shutter to Control
Solid. hairs 1" thick
6 board


Head
This is a Complete
6" pipes lined inside with
1 1/4 inch of Cowhair in bag
Cotton stop Echoes —
Triangle tubes
6" made of Cowhair lining

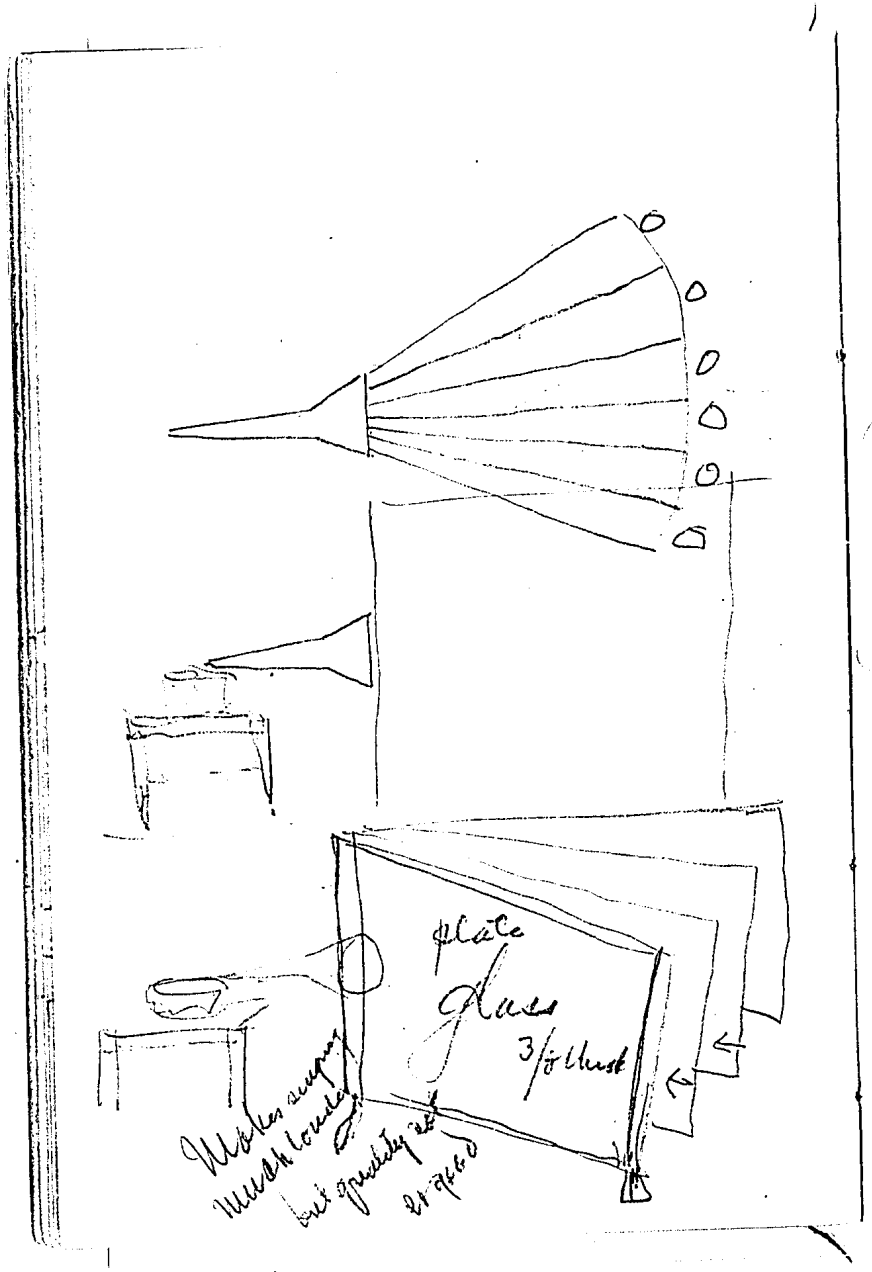
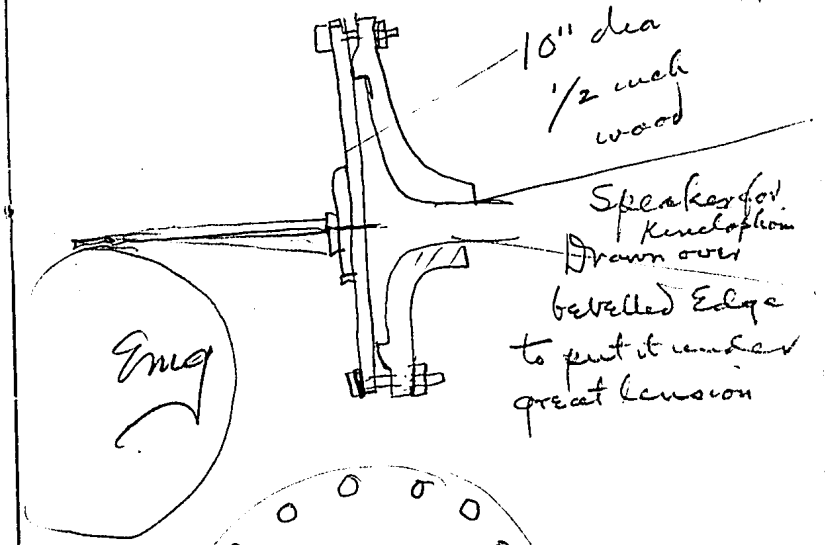
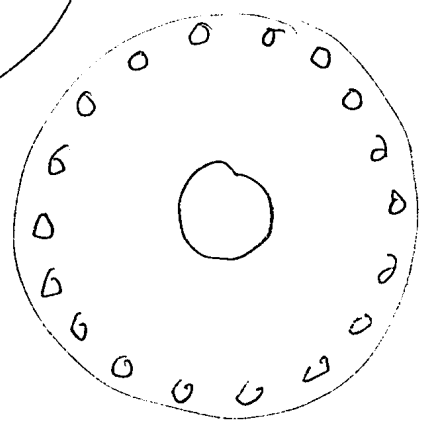
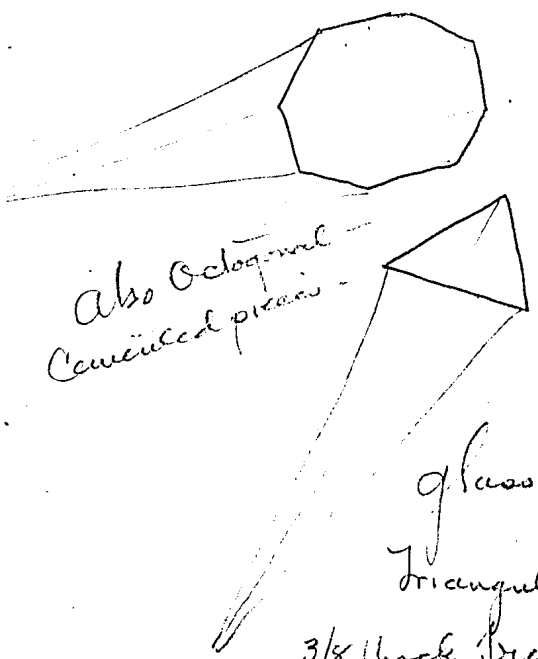


plate
glass
3/16 thick


10" dia
1/2 inch
wood
Speaker for
Kinetophon
Drawn over
beveled Edge
to put it under
great tension

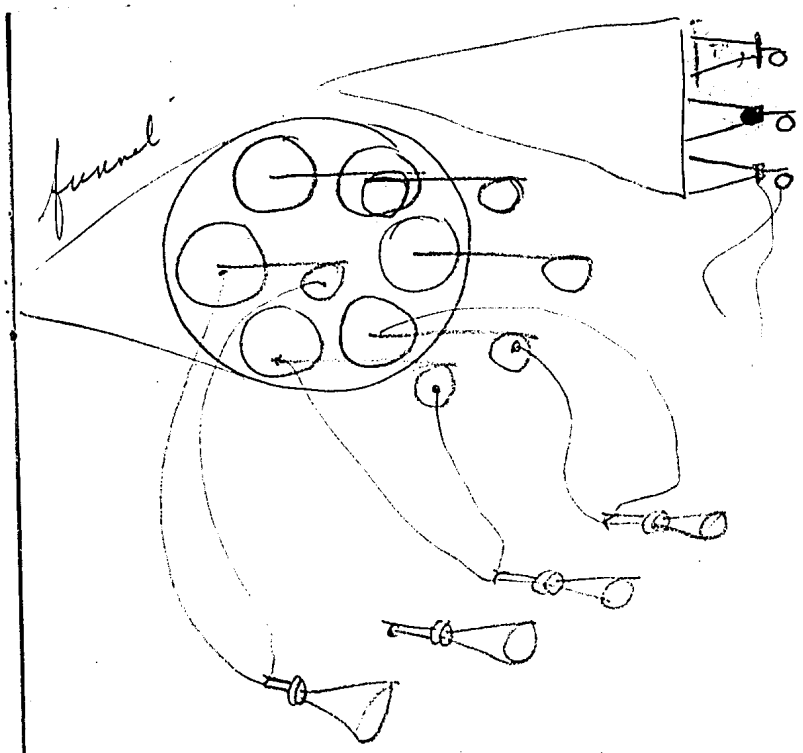


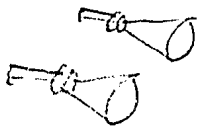


Also Octagonal —
Canned pieces —

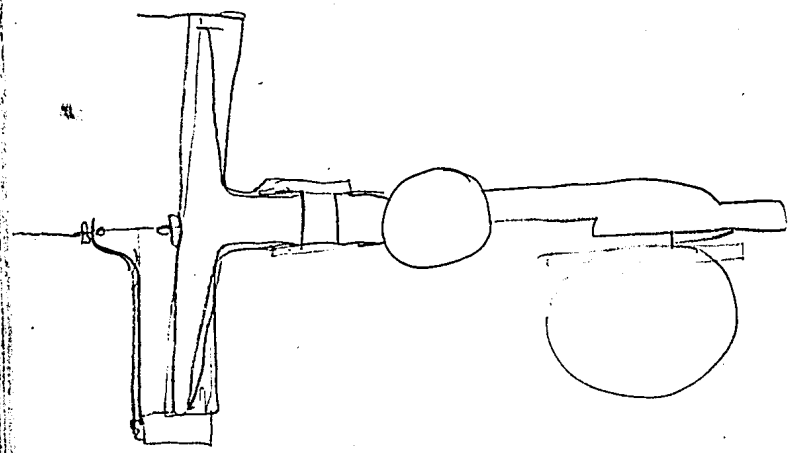
glass funnel
Triangular
3/8 thick female plate
glass cemented —

Have these necessary for
funnels any size
Volume all need flame
Can't say how quickly
as with flame

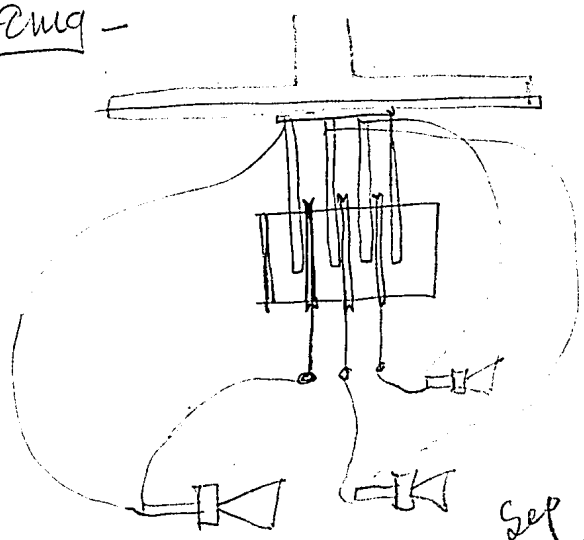




Bell Telephone
Exhaust apparatus
mat —
Emery - Regular Macerated
from Glass Funnel

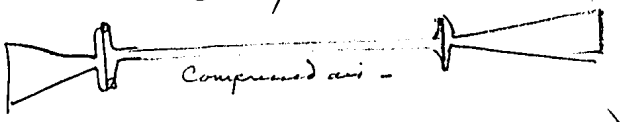


Emig –

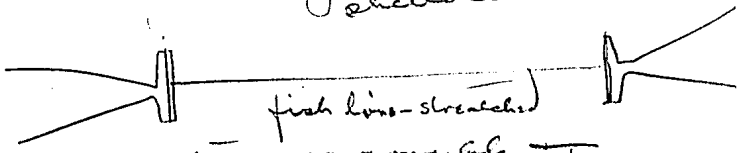


& so on Sep
Checks work

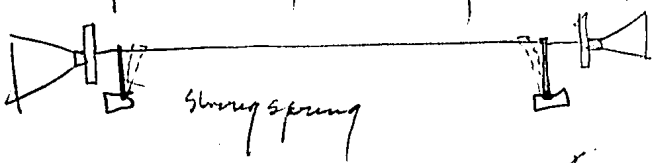
A 003 Copper steel wire 10 ft long
is same as a Cube 1/10 of one
inch, thus is next heavy loading

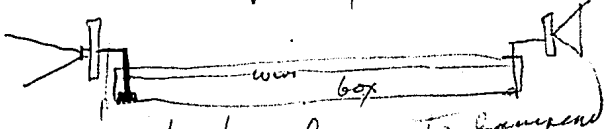


Cat gut, driven thread
shellaced –



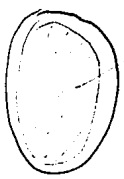
as strong as possible –
shellaced thick so it is soaked –
shellac + gum sat all over outside
5/1000 thick, then waxed shaved
Ended by longitudinal Vibrations
12 ft should be very light
weight. Measure Rheostat
very tight & assembly





box has glycerine to compound

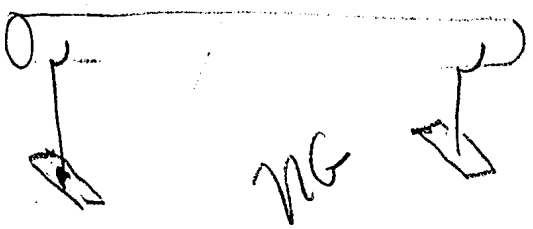
It looks as if nearly all of a sound wave is absorbed by a bag of Cowhair such thick



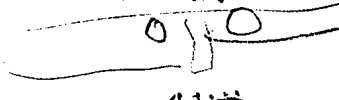
dia cowhair

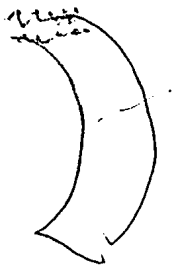
Sound waves would not rebound from Cowhair hence whole of the Energy should be absorbed in giving power to Dia —

In Recording room are Can be got up (12) Undulations thin few 6@10 ft 6X6 Inches Lead Cowhair



Try 6" tubes of Drawing Board paper or Brown Wrapping also Octagon with strips & so only sections of paper vibrate Hence would get quick response that carry over 66 Sound - stop Rebound Vibrations —





Have a Tune with low notes

Try one made of metal tubes from 1½" downplane wooden for Bass

It may be the reason we have Values on. Low notes around is that partitions funnel it two parts in tune + give big Vibration to touch of finger This degrades the Energy The funnel channel displaced to low notes + everything Else in room — Piano top slab

Bell sound maybe due to impact of sound waves Especially low ones + possibly 10 ft long box will ring maybe bell sound when 30 glass tubes inside resonate together will not + val nal would dominate passing Brass tubes — the Bell action will diminish as diameter diminishes Even 120 1/2 bore glass might do better —

Possibly = Wind instruments Could have connected to them Cavities like the human Cavities + thus give more overtones + changes gradually of instrument Harmonics

Put strip Cork under bridge of Violin —

glass fibre bow for Violin +

artificial Silk strings to bow —

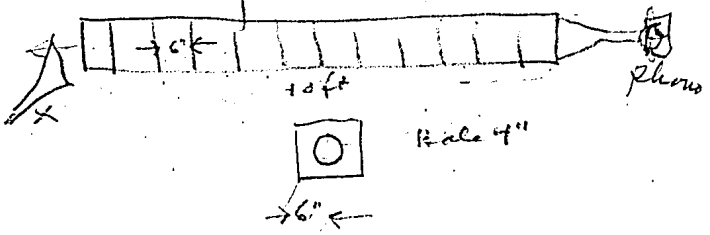
an Extra dead string 3 of them steel — to overstrain the Violin — + not used to play on — Cleaner resonance

Aluminum cover on Violin = also Sizal also the fabric from aqueous Wax used for thread impregnation

Steel
Paint strings with Condensite
Varnish a Ramdew for
Violin —

Violin - Strings double like
piano — steel strings —

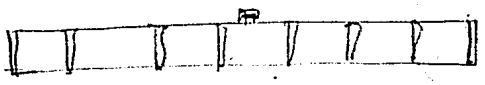
Tried today

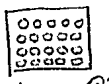


With all in scarcely hear
anything with the partitions
closed half-plaza and 6 of them
No improvement but somewhat
louder without partitions
1/2 the loudness with X found
at end as it was with
X in front rig found

Noticed when No partitions
+ box lid open heard scarcely
any Bass Everything sharp
no mellow or overtones,
When lid closed it was
twice as loud & Bass
Came right out loud + mellow
Cuts higher notes Thin,
+ tinsley —

Shows which are bad -
also 10" 6" wood box
Cuts Violin down more
than 1/2 = 2 ft. doesn't show
much barrel sound —
The whole trouble is
friction,





End pieces – ~~of~~ Scraps

with thin Celluloid + 50 lbs pressure in 10 ft tube 6" mouth or can use 6 inch pipe –

Think of tube polished inside by very little Lacquered –

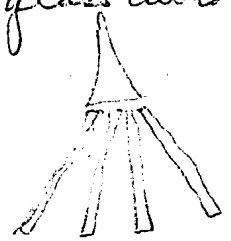
Tried today Feby 10 1914
24 tubes brass 1 9/16 inside diam 1/16 wall (about) 12 ft 6" Long

The Volume when listening with funnel was about 1/2 that when funnel was in front of phono funnel

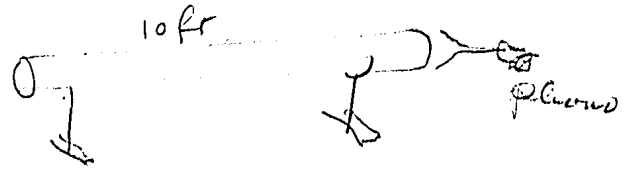
If Very much louder than 6" box with one or 2 sections in –
The quality was OK. Person spoke in air gave 1/2 the strength than can be when he spoke in funnel Voice change in case + Mellow in funnel – apparently Very little muffled + no echo or other swell + about same muffled as Humphrey talks + is more favorable for music + singing than otherwise
I can't find any Vibration of tubes – Stopped a room with ~~cc~~ carpet it was sweet again and no barrel sound

Think could go 15 @ 20 ft.

This probably by bellow with glass tubes 1/8 wall –



1 funnel 4 section of tube or 2 funnels make 8 or 32 performer



Tried drawing paper 6" dia
Listened with funnel dia
it acts about same as 6 x 6"
but shade louder & thunk
its sharp + poor.
The 24 brass is mellower far
superior for our purpose but
only 1/2 ~~[illegible]~~ ts 3/4 the loudness
but & thunk glass will
increase Volume —

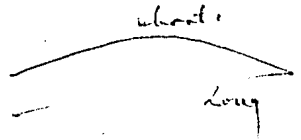
Ft Myers March 15 1914

Interpose induction
— EMG check ckt if much
internal movement in
Carbon Contacts —

A funnel to record B
funnel closed at small end
The walls of A funnel
are neutralized + closed
not vibrate producing
B walls are strong

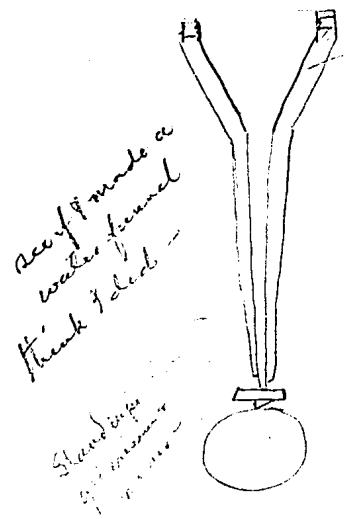
to get perfect reproduction
End of B closed when talking
a diaphragm

I noticed in Explanatory talk articulation. is better to me on Last ½ of record than first, also the singing + music is better, — Which seems to show that overtones + higher tones are less audible on long than short thick



Also it is noticed that on cracked blank has a smooth surface with few scraps — But section reveals how it is rough and [illegible] scraps Thus due either to vibrations given The Sound box itself by the waves blown Or the displacement due to the waves displaces irregularly or makes Hard rough surfaces reveals are not given certain regular displacement to face of record and [illegible] [illegible] or wax chips

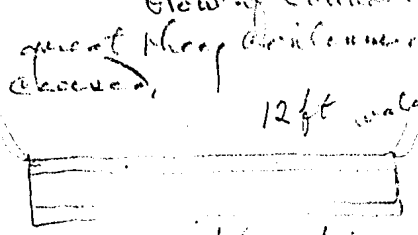
It is noticed in the playing of Reg Teachers of 1914 January to March that a scratch made to one other first part of record than the last a reversal of all or nearly precedence in



to stop movement of walls of funnel

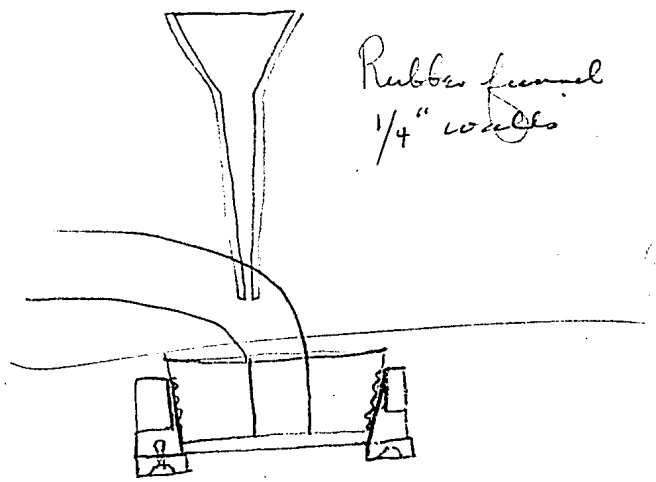
9 inches barrel Sound use Horn long wave tubes 14" plan is due to blow of sound waves

a curious in one of Reg Gramophones Sound has changed, also tone



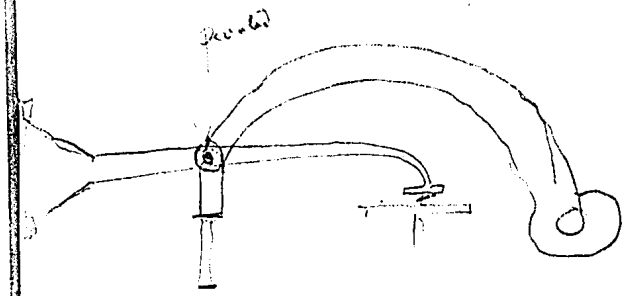
see if barrel sound

The 66 around increases as diameter of tube increases - Get very thick Shelby tube 4" a 5 ft long it, pressed inside ½ to 1" walls of [illegible] Also cast iron 1st thick - 2 together 12 ft polished inside, 4 or 5 inch inside -



Rubber funnel 1/4" wedge

Taper wedge to spread holding ring where Dia decreased at Edges to overcome heat expansion by variation the distance

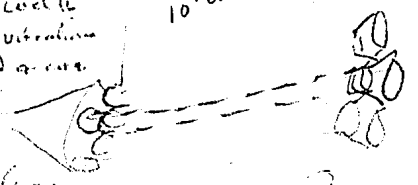


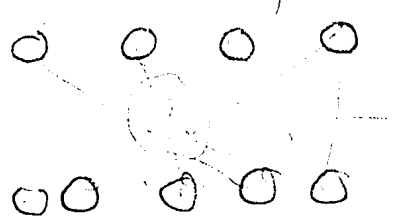
We should fix ground hammers to reduce variation high water or low water will be recorded + give proper [illegible]

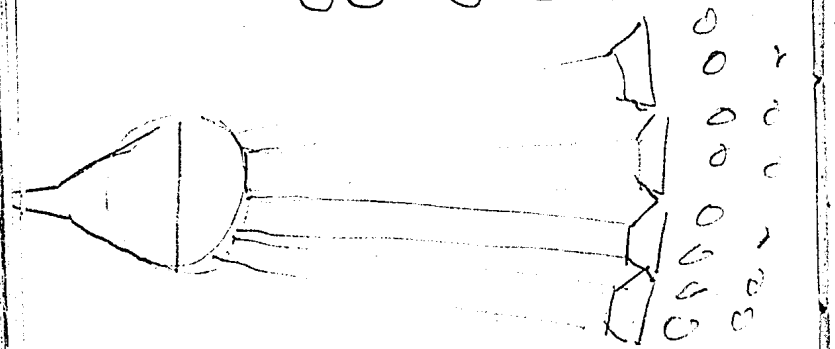
Brickwork -

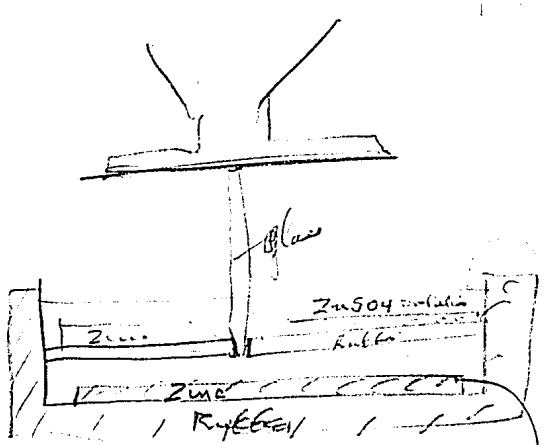
Evidently after [illegible]
of Barrel [illegible] to degas
to [illegible] walls in cooling
1 @ 1½ glass; the [illegible]
too high to record a run.

10 to 12 ft
1½" glass to Centre
10" [illegible] Nucleonics

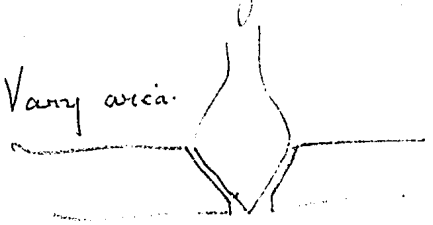




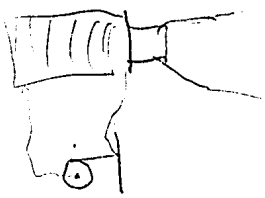




Electrolytic Telephone



Direct or Thru Coil -
Magnetic or [illegible]

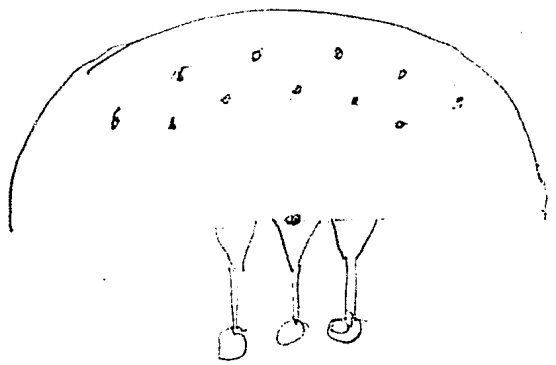


- 1/1/1 -

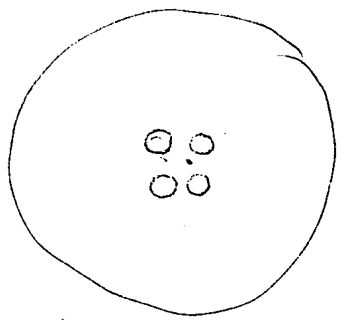
The colder the room temp for recording the greater the volume and air is where denser & more movement of particles - gives stronger waves, in a vacuum there would be no sound waves with music, ordinary Voice there might be with much movement

The paper the funnel is made of was a conductor for heat the better, the conductivity was if it received heat or cold is affected accordingly - Cones are generally best waves, or natural wood & heat from ground cannot to expansion in growing Resonance -

Wood & Varnish like music wanted Horn using wood - best shows the loudest of all the 42 funnels for recording - 9 of away from a Disc

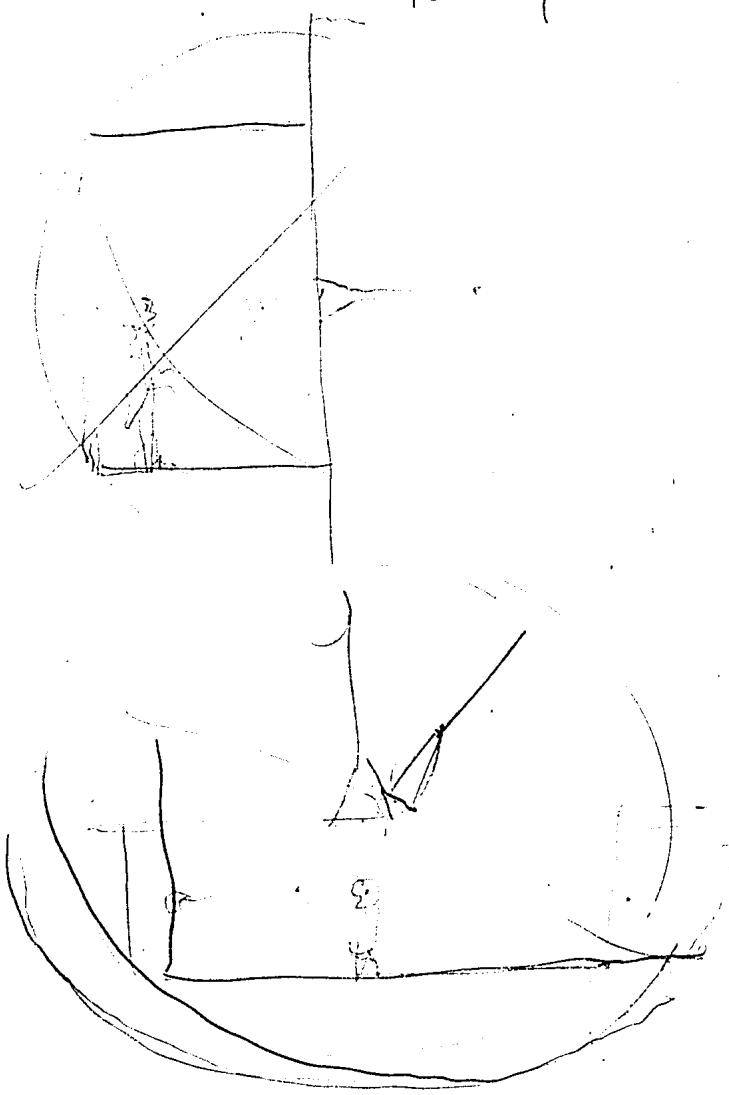


Think with the Reflector & Records equally 4 - 2 top 2 below can be taken both same time -

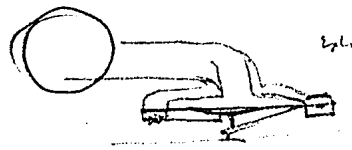


4 would be better as can have a man at each

Kinetophone—

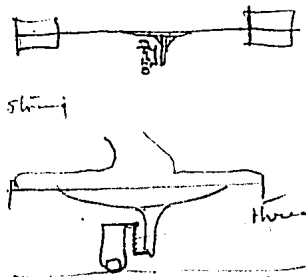


1" celluloid dia fastened at Edge—



spring to bow dia upward-so it wont jump out when sensitively adjusted—
Old style free at edges has no limit + must jump out if sensitive, Only use spring so it bows if just enough and no more —
Perhaps if Knife holder fastened to rim + not to dia it could bow diaphm upwards enough to prevent jump out

also



Cant jump out.

Films for Recorder with Diaphm fastened around Edge

Hyatts sick
Collodion
Acetylcellulose
Silk Cloth Collodionized or shellacked
Gold beaters skin
Fish bladder
Animal membranes generally
Glass flow sheets blown by Daily
Rubber stretched to limit
Disc Varnish Peula & Para taken from plate hot or use Sesame oil —
Paper - plain Collodionized or shellacked
Mica
Nickel 1/4 in - by Electrolysis
Sesame & Silicate Soda
Linen Collodionized, gutta hot rolled, Shellaced Etc.

If Animal porous membranes used in recorder, fill pores with gelatine, fresh glue with glycerine to sound well go. when water goes or dimmished Volume

When Piano is used strip it of the Case & all parts that will Echo the sound wave from other instruments & in Reflector put it in various positions to get best Effect. —

Quartette Rigoletto

Each singer has telephone Ear piece connected with telephone a clarionette plays the melody The leader who has telephone Cap gives the time or rythm all singers sing to Clarionette & Correct look by it to get no beats no singer head any other singer —

Above Ng

Navy Oct 25/16

Using Rapid heat covers some heat smoke stack of Dreadnaught to act on a lamp lay on a focus — & Thermopile with galv or telephone receiving Current transmitted

Photography Send out a beam of light as powerful as possible down any one with practical amount of electricity. Open beam then in direction of Clarionette for visible light — Use very sensitive plate with reflecting lens order to bring to a focus. focus demonstrate the plate with sequence or Equivalent Heat from Furnace — Experiments to determine best Sensitive Dye for photography Infra red.

Rock salt lenses or Fluor Spar

at 100° heat the waves are 92% passes Rock salt 54 Sodium Sulfur 33% fluor spar, 20 other things — Tyndall's tables give 3½% reflecting power

Opaqueness to 100° radiant heat depends upon the thickness of opaque substance are made very thick they may approach Rock salt in transparency —

The water vapor in the atmosphere is going to be a bug in working infra red at a distance — low humidity will be few and far between

Gun machine guns after Charge explodes Exploded Capsule Solid CO_2 or Liquid ~~or~~ to Cool gun.
or water jacket Water fed with Solid CO_2 ~~block~~ Think most practical is water Cooling ~~at~~ minimum pump circulating thru a barrell sub cooler. if large area radiators to ~~the~~ gun barrell. poly Ethylene record powder

It is probable that there are ordinary conditions which relevays appear. Calculated to use values of muzzle in absolute darkness for light & radiant heat & how long that they would exist. Could not exceed a Freyan second. Would stay or Infra red & how could these flash in the dark & detect them ships at a great distance in inky blackness of night

Think on night attack use of over & only Exploding shells that are opaque sensitive to light & reflected that ordinary light would be used to see that ships but distance —

Another scheme is to send out very powerful sound waves that for second below audibility These waves strike ship & rebound back — long Cylinder is tuned to these waves. & listening tubes used with a revolving valve to break up the waves into 256 per second or higher rates they hear over

Iodide (red) of Hg changes color with heat, Turns yellow

Infra is absorbed by water, benzaqua (bad) glass is practically opaque
White rock Salt, CS, Chloride of phosphorous passes infra freely

Telephoto Lenses

Take advantage of the greater absorption of 100 c Yards Mercury gas for reverberant heat than dry air —
Use thermo & bridge method —
Air (dry) absorbs 1 while Mercury gas 403 times more
Ammonia has 1195 —
But relative absorption where 1 inch is air 1 — Olefiant gas 6030,
Sulphurous Acid gas 6480
adding 2" does not increase as may from 1st inch readily 90% than 2nd "

The time elapsed between time waves sent out and return gives the distance of the ship —

Another way is to use my aeroplane torpedoes containing a charge of magnesium powder & with a very powerful camera gun send it the greatest distance possible & explode & light the powder — at same time on top of vessel have Telephotographic lenses & rapid sensitive big grain Emulsion plates & photo with the flash record heat the Nitrogen —

Any high speed (40 miles) Aeroplane Engine could be sent out to do this say 300 miles or more a distance could be used

Think in clear nights by using only the photographic rays which are nearly invisible & not using a beam or focused use several beams to give general defusion so enemy would not notice it that we can photograph a dreadnaught

at 5 or more miles if we use a Special large grain Sensitive plate. perhaps a generally diffused blue & violet rays could be used. + Exposure of 1 minute or less.

Special flypaper or bandline paper bits for spraying ground on retreat Delayer -

Ditto a Mechanical delayer like a lot of wheelborrows operated from 2nd Trench -

Try Expmt of how Effacent a 1½" Cowhair pads over the Ears is - in Cannon work.

~~[illegible]~~ boomerange photogh Camera to go over Enemys trenches & sweep around back - may not be hit or noticed - move Swift.

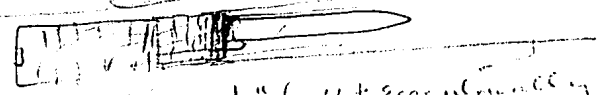
Electric boring Machine device for
boring to close by Grenades
or opening of Children Etc
The chloronk under pressure
when break their gas reaches an
Mining explosive connected —
5" hole It would strike the
deeper or rest sections
a non-poisonous gas would be
better Gas an explosive perforation
better probably — only it would do
with 25 per mile somewhere
Example melting of Ice caps by water
with explosive gas, The gas would
probably have a fog or smoking
or non open light,
We could protect by shield. till they
get in the Tanks,

If ground pressure could use double
depth center to make hole,

A large wheel 3 ft free
6 ft dia filled with gun or
Dynamite, propelled by a device below
the ground & with Electric Motor
causing it to revolve
course the wheel not penetrable
by bullets & moving fast
for queer of Expanded water
or Steam Engine,

Also an incline up which wheel
rolls & exit vertical motor but
Collapsible if Enemy not for
ward, unravelling & wound &
fired by periscope,

Wheel runs up incline



½" bullet secured by
fastened to disk
The disk would stop while
bullet would rotate on the
Eccentric axis & produce more
Effect on larger bullet, Three
½ dog Turns as usual Ammunition
could be carried.

Powerful arc light in daytime
might be an aid to vision for
Operating periscope -

Many revolving mirrors
Through many deflections of the
Rays for all kinds of observations
along the horizon in bright day
light Bright pinpoint The periscope
Mirror can be viewed by compressed

If a Beam strikes his periscope
glass it would be deflected
Search & reveal his presence

Bomb - make it somewhat spiral
fine teeth - use an inclined board
teeth in the Direction
bomb - Hold bomb
Sure Recoil Device Mirror
or hand machine, Key drop at
on board chart, cap incline
& Collapsible over all the
Ingredients - Then would be
lighter & triangular Upon
propeller wheel

Photo plate may probably be made more sensitive by electric heat

Possibly a 300 to 500 telescope pipe with rotary mirror [illegible] if disc used as perscope [illegible] used.

Aeroplane propeller to go to limit of vision from tower Need gas discharge which on lighting or ignited Magnesium powder to ascertain Visibility of ships — also Calcium Carbide + Carbon to ignite at Throwing away of vision over wide horizon possibilities as suggested in Spanish Civil War —

Try the Tinsel Lacer telephone used for range for Midshipmen Intercommunication —

Ditto air compressor pipe system of drop tube Gauges — Central station Head telephone —

Wireless, write to Commander-in-Chief Communication as fast as can write

From ship to ship — Tube Communication phone Think they make porcelain lined tubes — ?

A good AI smoke producer is going to be handy —

Ditto a tracer for projectile — smoke —

Any bulkhead used in a turret should be in an Explosion box

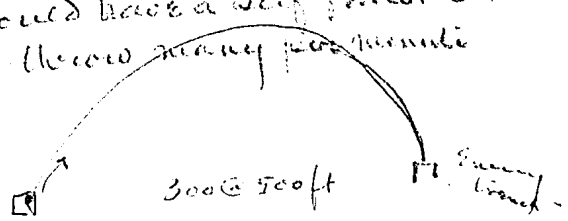
Why not correct the droop of 6" gun by a tricon plate — This would help expansion & prevention of cheating —

The lining of a gun after Boring should be mechanically scraped & then honed & rifled — I am not sure but that it should be hardened —

Try Experiments by pressure Gauge thru a tube scraped & unscraped hardened & not hardened — This will give a rough idea

The Ethonic force (sic) Hertz? of the dynamos on war ship may be a source of danger as a drop formed or a pole in wire rigging may give a spark — Try —

Burning bomb tube with
Oxide packets using gasoline —
Say 4 feet long keeping up
the pressure during Intake
Stroke probably Petroleum &
Naphtha or Pet Benzine better
or Kerosene — Beyond adjustable
piston used with Capped rod
Extending thru End of Cylinder
with Extension guide for bomb —
Use Compressed air to clear —
Could have a self starter on
a thrown away part of mechanism



The kind of Trajectory
should be readily measured
pockets + angle control deflection
+ Trajectory —

Right angle or communicating trenches
should have board or sheet iron
bottom with Shrapnel bullet Can + cans
to bring up men + return bucket Cans
go back with old shell — also bring
up ammunition + grub —
& Inserts good upon — probably
grooves in boards to guide

Motor trucks should be
designed to go over hills ploughed
fields, stumps butt away
fences + make good time + not
depend on roads at all —
going thru woods, a tree severing
Truck should cut away the
trees fall + remove leaving stumps
say 1½ or 2 ft + the steering
trucks should follow guiding
after these stumps —

Cantaccuzeny Hypocrite de la
chlorine would clear the air of
Chlorine if Every made has one on
large trucks ready — Kill it before reaches
trenches —

Tear producers can be taken care of by recollection Extremely Painful but over by sticking by sticking plaster.

If the Rock of Gibraltar is of any Value why is not the Navy sink) Monument at Sandy Hook

With a harpoon gun throw a lasso with 25 or more feet loop over a periscope with a quick pulley drawn section to tighten loop + draw to pull off periscope

to a whitehead torpedo appears the Mariner fires a hoop with various devices of diverting Explosive bomb to divert its course or explode it,

two arms with fine wire (looped) Cable Connecting a heavy iron plate under water, when Torpedo is screw work water to bring plate in its path to Explode it - say 25 ft from boat. This can be guarded against. When torpedo can reached

Run up from the fighting mast a pipe like mast to carry dully very light at 150 ft beyond top-sailles put a periscope for observation

At sea 50 or more miles out lay small cables with microphones strung along every 500 ft & resting on bottom, strg 600 to 1000 ft deep - 20 miles each way from end of a land cable to Gibraltar & Canaries 600 miles long will require 15 stations, No ship could pass without be known a number of whipps & positions (500 miles)

Think position of a ship by sound of propeller Could be triangulated & torpedo fired without a periscope -

Think Mines could be strung along Coast 50 miles or less out & controlled by Cables & fired by a submarine -

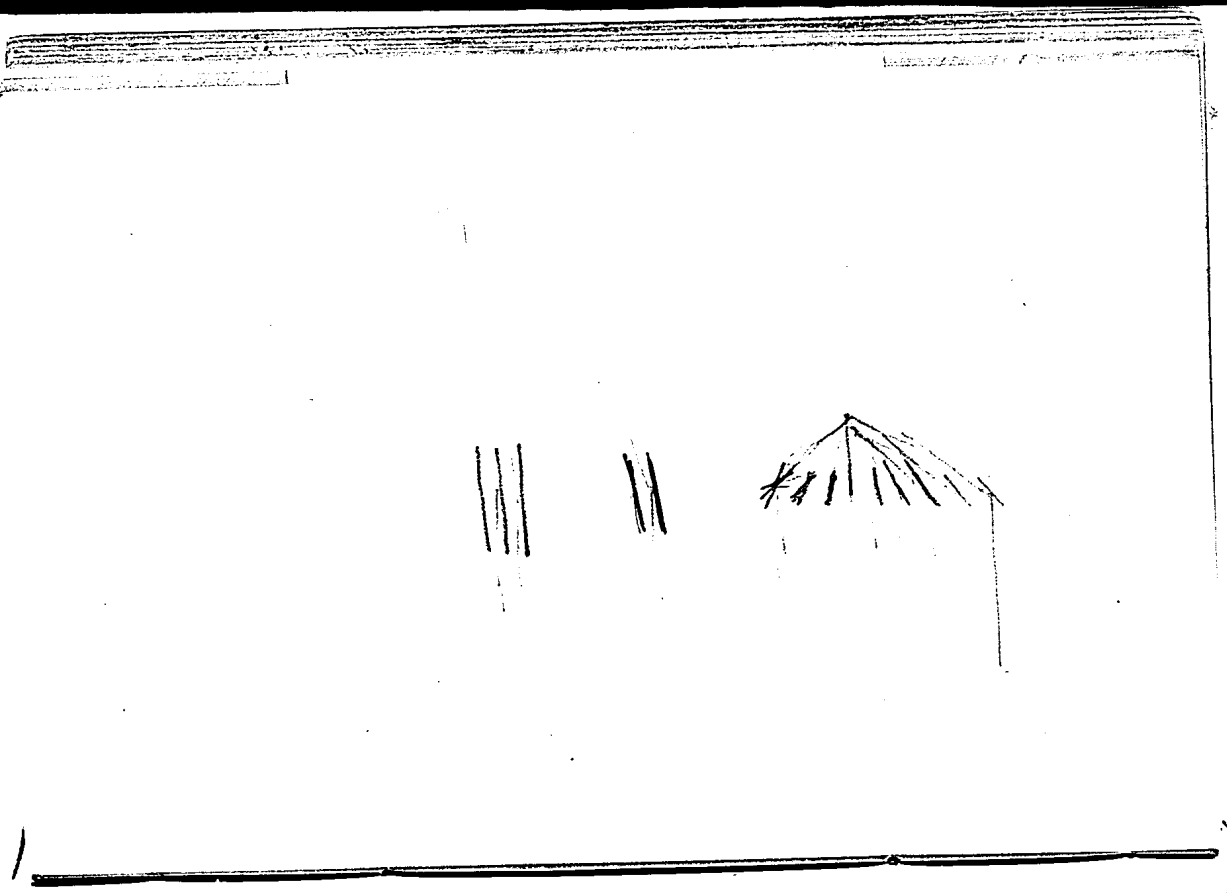
Can a gyroscope be made to guide a small balloon with Camera & blow out a certain distance by a time clock stop and start another gyro to bring it back.

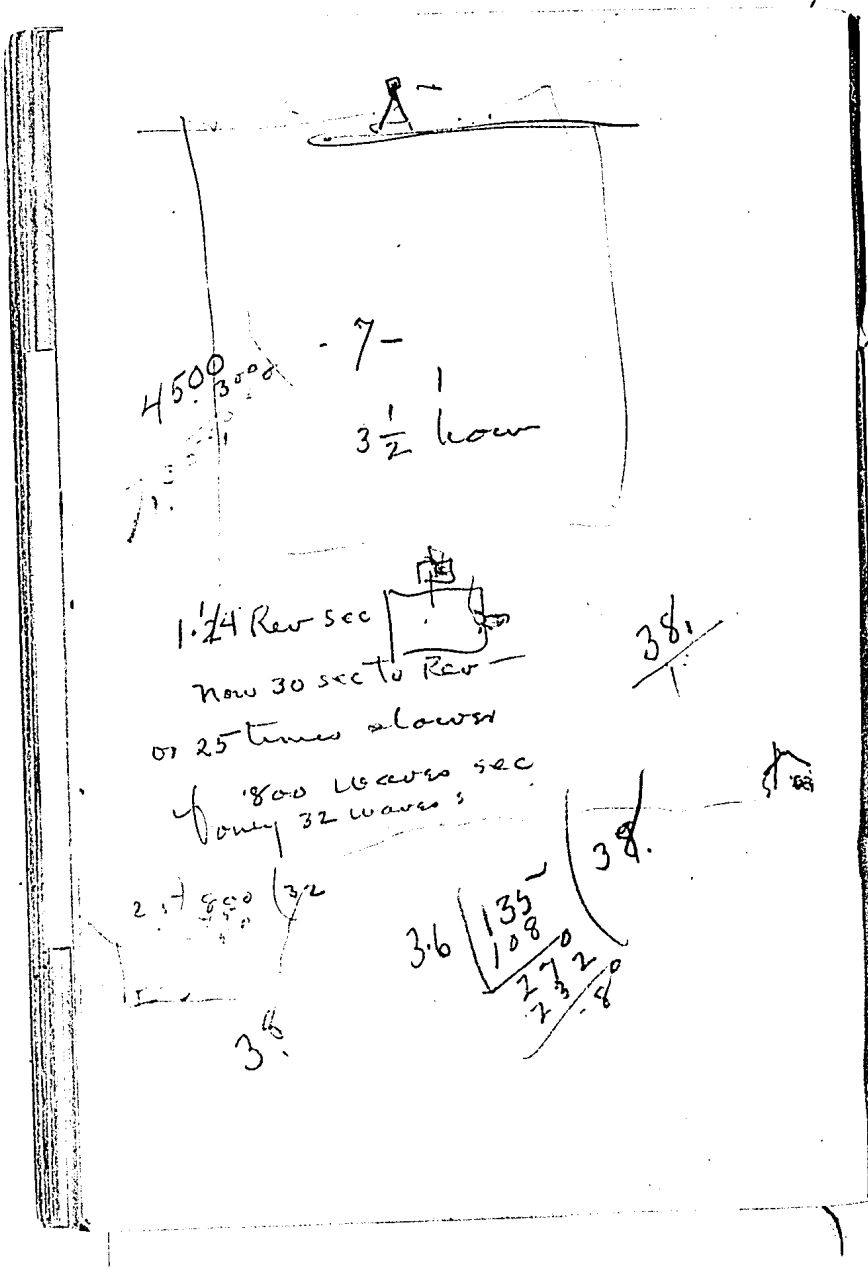
Study up the Range finder & the glasses they use

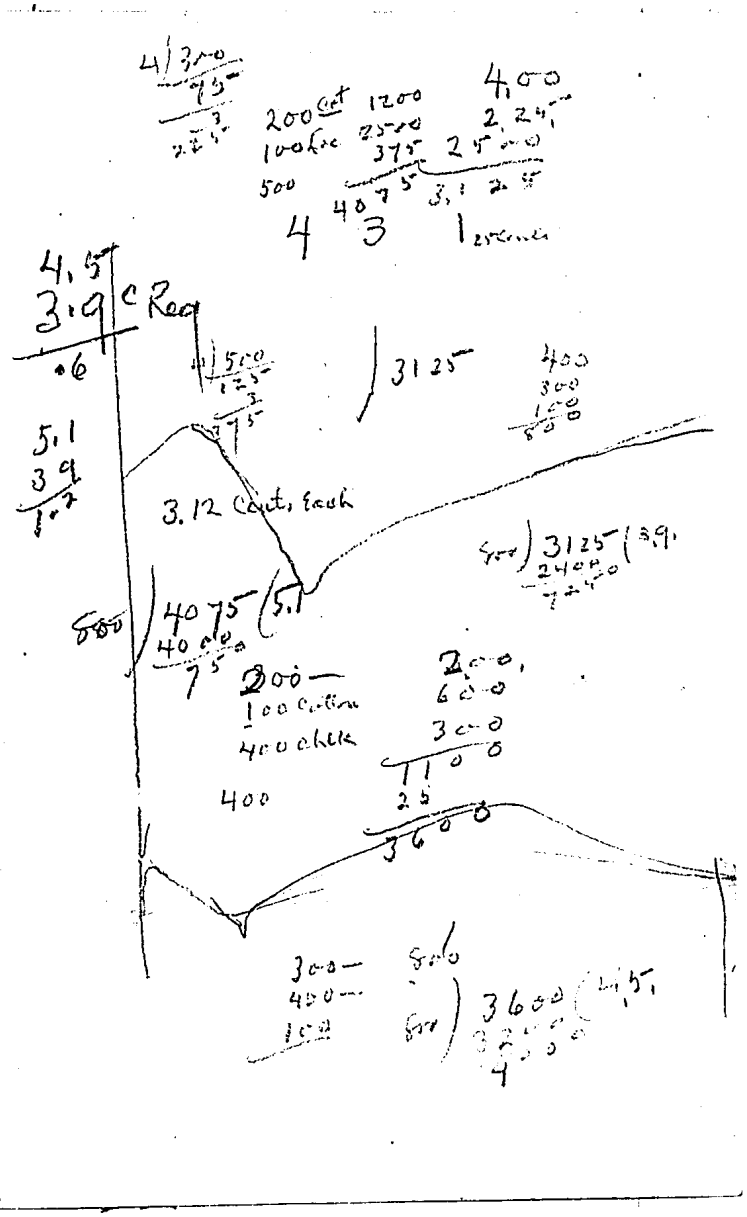
Can a special small gun 2" be made to prove the range by making a hit giving an electric arc & momentary appearance of dense dazzling white smoke & forming rapidly. If the characteristics of this gun is accurately known the big gun should score hits from actual Experiments

Why not make a very small machine gun with a removable brass chamber into which from a coil lead wire is fed using 1/8" bullet. This is cut off from a coil smokeless powder is fed in & cut off. The record used to feed. When removable brass bush is worn, remove it use the grass from powder to compress & fire to cool the gun.

Alter the feed so more or less of the powder tape or cord is cut off according to the range.




4500
3 1/2 hour
1.14 Rev sec
Now 30 sec to Rev
or 25 times slower
than 800 Revers sec
Now 32 waves
38.
3.6
135
108
38.


4 3 1 errors
4,5
3.9 c Reg
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3.12 Cent. Each
3125
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400 check
2400
600
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3600
3.9
4,5
4

Notebook Series -- Notebooks by Edison
Notebook, N-14-04-03.1

This notebook was used by Edison during April 1914 and was annotated at least once in 1916. An entry on the first page indicates that the work was done at Edison's laboratory at Fort Myers, Florida. The book consists primarily of 87 numbered entries entitled "Notes on cause of Low % of good disc output." The entries describe ingredients and processes involved in disc record manufacture, identify the potential sources of problems, discuss experiments done by Edison to improve record varnish, and suggest additional experiments to be performed. In entry 58, Edison noted that the problems resulted from variations in the thickness of the blanks and consequent differences in pressure on the transfers at different spots. Following entries 84 and 85 are several pages of notes on separating nickel flake and nickel hydrate recovered from old storage batteries and on a "New Scheme" for the battery. Following entry 86 is a list of eight "things to 1st receive attention" when Edison returned to New Jersey. Near the end of the book is a one-page summary of the results obtained by William W. Dinwiddie in his experiments on the expansion and contraction of Condensite veneer, along with the notation that the information was "Entered in 1916 Book 3." There are also some calculations regarding wages and general expenses. The notes indicate that Sherwood T. (Sam) Moore and Ludwig (Louis) Ott assisted Edison with the disc experiments. The front cover is labeled "Disc Records. Fort Myers. 1914." The pages are unnumbered. Approximately 60 pages have been used.

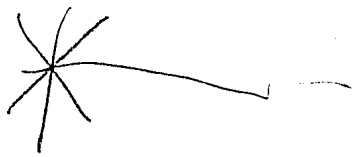
Ft Myers April 3 1914

Notes on cause of face % of grad due accipent

1 = Temperature of Blank is different from Transfer when assembled or one is been made longer than the other with Consequently more internal strain.

2 = Penta smoke or smudge may act as a surface Lubricator + do good, and when Penta is carried to a long in Chlorination smudging Malapping may be absent or reduced, smudge may allow slips. When we didnt use Penta % very Low, cracks but the moment used Penta % went way up, but smudge was great

Probably due to Ferro Chloride in Penta Cause of smudge or Easy leaving plate



3 = Penta chlorination carried too far, too acid, also oxidizes, If oxidized no longer soluable in water, I remember however when we were using white distilled penta & was getting high % Suddenly % of transfer went bad without any change in distilled Penta.

4 = Look out for rapid Oxidation of Penta I have noticed Penta being thrown out of Varnish on plates while Evaporating This would tend to segregate Penta, The precipitated Penta shows especially when our strikes Varnish & waves are going on —

5 Too much water gets in The Various materials used for making Varnish, Alcohol Wood powder, Resin, 6/4 —

6 = % formaldehayde in Dryer Escapes + makes lower grade of Resin, hence large part of 6/4 added as naturalized —

7 = Edge of blank in Transfer press is exposed to air + chills quicker + also never reaches platen Temperature — Center always hotter

8 Some men open water Exit wider than others also Water entrance End cools quicker than Exit end, gives unequal contraction Some steam valves don't shut tight, steam leaks into cooling water, hence blanks not chilled so quick —

9= Air draughts one day different from other days + temperatures different Copper leading in pipes condenses steam + get lower steam pressure + temperature. by air drafts

13= Ovens cool down from 225° quicker at times + produce strains Cooling with cloth Covered trucks not long Enough + go To press strained

14 Wiping rags in Print room greasy - permits slip on smooth Edge of record when not welded at spots + this start Crack -

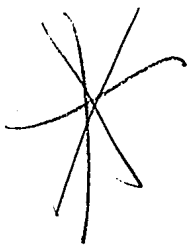
15- Bad Prints not Enough free Phenol + transfer gets too hard making Varnish too hard to flow + fill Wants more free Phenol, is cause bad prints

16 = Penta, oxidizes in mixing Board

17 = Free HCl left in Pentacyacetate on Calyx-Eosin + makes harder Varnish so can't flow in printing Must soften Varnish to get free —

18 German D plates, have at different times a smudge or residue — absent on other days. Thus affects transfer — this smudge or residium may have become offset on Sesame —

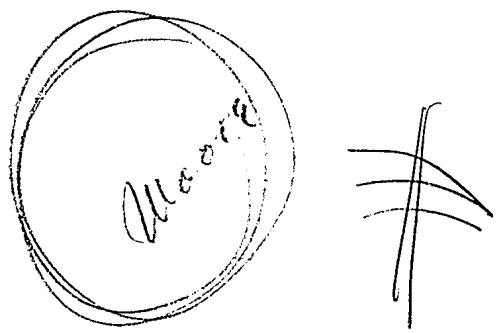
19 To much alcohol used on plates — one condition of Atmosphere + draughts nearly all goes away — other days but fickle goes off



20 = Without Penta, or Para we get very low % 40 to 50
With Penta some days we get high % next day low %
Effectiveness of Penta depends on some change in process -

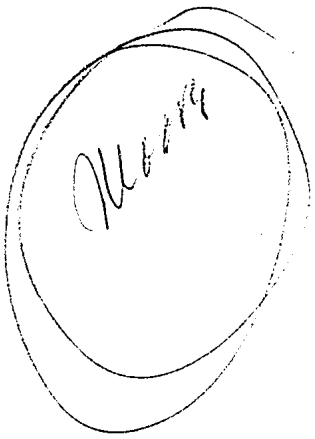
21 - Once we made lot of Varnish with only 2% Para no Penta & got 100% Transfer & 100% Print never got anywhere near it again ~~+ no Penta~~

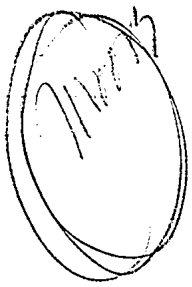
22 Once we made lot Varnish using only Para 3% it dried & cured solid in 2 hours in bottle Then reduced it To 2% & this was used in No 21 above Methaens old Crude Para Now cant get it to dry within 24 hours why



23 Very few prints show conspicuous Cracks in Print room - in room next to print room shows 2 or 3 times Cracks then They go to Inspection Dept. + they find 25 @ 30% more This shows that the Veneer is strained + our drawing + handling Causes Cracks — We should put holders in boxes + immediately Records are removed from moulds should be put on holders in boxes + lid put on + held 24 hours before machining to allow strain annealing —

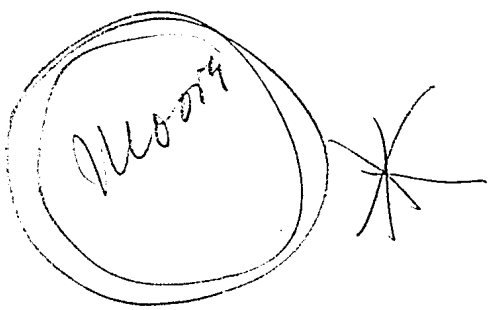
24 Grease from hands get on blanks on transfer and on print, the transfer - No weld on transfer. — On transfer no weld on pat + get Crack on print, no grip on edge at pat + we get cracks





25- If varnish cracks after taking out of Oven by a breath of air + taken gradually within a few degrees of the Atmospheric temp - or if out + OK + then put in a draft or little Cool Air than room Temp + they Sometimes Crack Why Should not Prints Crack if Exposed to air after coming out of press Why Should they be given time to anneal.

26 After Prints are taken from the Mould they are under great strain of those which are not cracked many will Crack depending on position they are placed + air draft Should be given a chance to anneal.



27- Possibly we should let off the pressure in both Transfer + Print very slowly after Cool, taking 2 or 3 minutes, to no pressure on gauge then rapidly after Heat. The sudden release of pressure may make a snap, a crack, a thing Can be done gradually that will snap if done suddenly —
Also possibly pressure let down with heat as it goes down, especially after Vacuum is cut

28- Think we do not want oven press phenol in Vacuum Pockets of proper quantity of blank surface will be soft + flow easy + stop good prints + will wear OK - any great excess will cause demand to cut

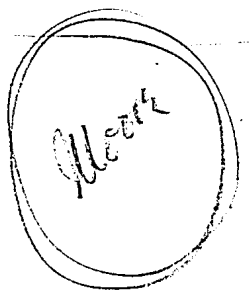
29- Think that screen is very variable as to free phenol & some way of reasonably testing the above proper addition should be devised -

30 = The action of 6/4 with proper amount of free phenol in Varnish is to harden the resin very hard & to turn the free phenol into a soft tough Condensate Tough at Low Temperatures If not enough free phenol Veneer is to brittle & board not plastic enough for our processes If too much only defect there is that Resin will not be hard Enough & free phenol too soft & these give high plasticity & stop board pores but Decomposed will cut & it will be softened by alcohol

31= Our End March to April probably due To Variable Phenol, when Formaldehyde Escapes we probably get More plastic Varnish if not Controled properly by Haffman= if made without loss of its probably too hard & we get poor results.

32 The Occasion Para fors Varnish quicker at one time Much quicker to Love to Variation of free Phenol a low free Phenol Content. Varnish will be thicker in say 3 hours than it would if Excess free Phenol Cure —

33 - Blanks vary in amount they will diminish in thickness in Transfer & Print process from bad Mixing of Varnish or poor baking in Oven they being in different positions



34- Perhaps we should put some free phenol in wood pulp Varnish — Possibly Paula + Pana to ~~toughen~~ it + make it semi plastic

35- My chemical Room expands with 1½" plates with great Excess of phenol show that a corresponding Excess of phenol Can be used in fact no limit until the reacts wears

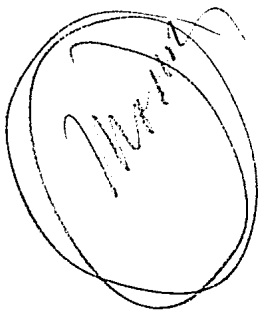
36= Enclosed at Myers Hall Condensate Made almost from phenol & 6/4 is very little affected by KOH, Cold The smaller % of Cond 2% dissolved out & precipitated by HCl is like Spruce gum for Chewing — Better try it with hot 25% KOH, if good residue Could use as a filler for battery hard rubber

37 It is possible we have too much free phenol + it crystalizes + makes it contract & harply around 110 deg

38 Perhaps if we need more free Phenol that when we have the right amount in Varnish it distills off in oven by going to high or keeping at too long at high temp +

39 We should try an excess of Phenol + then run at lower temp in oven to prevent distilling off.

40 - Perhaps with our present uncertain amount of free Phenol it would be safer to come down 10% on 6/4 or until it dont Cut - then cheaper



41 - We should test our plates Cocquelaine for % + Impurities +

42 = Perhaps our Screens are getting thin from using through of too great velocity being Then there is no margin of flow to take up irregularities of Blank & make good prints.

43 - I notice colour draught is strong over Varnish plates while Etching that the top is very hard + brittle + Callous Comparatively much softer, possibly the metal draught in ovens is not good -

44 - If we don't grind the Blank powder fine the Blank will be denser + thinner + by time it reaches print press it won't gross + permit a fill - the finer the more difficult it is to hold on it.

It has a spring back to it.

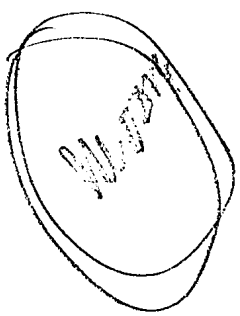
45 & In this connection to get a greater spring back to slop poor prints one might try 4½ to 1 instead of 4 to 1 of Furmoka wood fibre. This will be far more springy & of ground fine, stick more.

46 Today took
10 grams dusky Phenol
700 Mlg 6/4
1400 Mlg Modernday soft Penta
not washed.

Put in dish in Copper oven & over a period of 7 hours got 1 to 220 — Result was

Original weight	12100 Mlg
Residue left	5700 "
Loss	6.400

It was solid black brittle resin solid but softened heat of hand & at low temp was very thick



Tar like dough, sticky & tenacious
I think the free phenol in
Reg Var gives this —
It might be a good idea To use
phenol free Resin in Varnish
& then make a lot of about
Tar, add 5 To 10% To Varnish
it certainly would lower
the softening point & prevent
Records Cracking & give a
free flow for printing —
By liquifying the 6/# in
making the Tar, Could get any
result required —

1/7 = Have to a good schemic.
print record, keep pressure
on, the blank & Veneer will
be cold & not cracked, now
turn water off - put on steam
for few seconds still Veneer
heated up slightly — Cut
steam off & remove
pressure & take out mould.
The Veneer will be expanded
more than blank & can't crack

48 – We should get up boards both ends & put a test Varnish plate in each & Vicat needle to get the softening point – perhaps immersed in water & that heated in mud & remove every ½ hour a plate with glass & diamond Reader wear test then the Varnish that softens nearer 80 Fahr The less Cracking or poor points –

49 Varnish sent to buyers without G/y – acts different
Should have a Sample, and to random Varnish & mix & put in Screw bottles G/y & Kept & When Varnished G/y put in & mixed –

50 - Weather Report not to keep plates 24 hours before working

51 - Perhaps Chloride of Phenylene Diamine, Wood Alc & Bette Naph Base, or Acetate

52 Recently Coca mix. 10% or so Raw wood Alc to time with Hack powder for 6 hours & Plates get Electrolyzed into Lampblacks

53 - New scheme - melt wax thinly Dip Blank not Cool Varnish over surface of Plate in strong Alcoholic 6/4 - Para Phenol Solution with Formic or Hydrochloric dry & Print Chromate Change & develop to condense the Silver face Layer

54 = Treat the Varnishing Experiment
Lott is doing —

55 It may be use paint too high & too
long or high Varnish not
tacky medium so that in transfering
Paper not plastic enough & also
not enough smudge to render run
or quick surface that will free
the transfer from plate, old
Paints that smudged always
Come free

56 – etc. of what manufactures
substances from keeping of the
may be left on plate – that
makes them come free & this
film stays on transfer block
& helps in printing —

57 – Para once condemned Varnish
in 2 known Evidently
some impurity died it
What was the impurity —

58= I think we have the trouble -
It is this — The blanks vary in
Caliper, several thousandths
on one edge as against
the other, The Top & bottom
of press is flat if it happens
that more thin edges of blank
occur on the right or near
to each other, the pressure
in bracketing arm are very
different. In other words
these variations in thickness
produce unequal pressure on
one side of blank, & there
by defect multiplied by
using 12 at once
Our thing is, the press must
as everything has pointed
that way -
EVEN if Caliper of all blanks
were EVEN this theorem
argues that when pressure
was on they moved to
EVEN — as in Mfg blanks it
impossible apparently to
make a blank of EVEN density

59 - To get around this thing - is going to be different ft. We can carry on + please. The Thick side 2 edge is moved North + next one South next East. Next West + so on + the 12

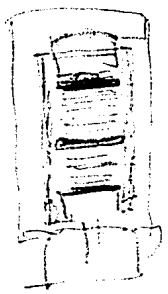
(1) (2) (3) (4) -

Nearly Every - Each blank thing occupied by a quick connect with rod at Thick edge, marked by white spot on edge -

The only thing that interferes is the pressure density which is not chosen by Cadapac.

60 = A false plate + possibly one platten removed - Top plate loose with a bolt put to get center pressure platens to lift + accommodate themselves to variable thickness of the 12 Molds + Platens Combined -

61 = Possibly Can get rid of Mounds & Patterns — Then



Assemble 50 blanks with plates of Varnish each side pile them on Top each other. Then another 50 — put both in a Tube — Heat by gas & when temp is 350 put on pressure 15 min Keep Temp Constant, Then remove & cool slowly — With Thick rubber Collar pressure & Swivel ball - gets Even pressure

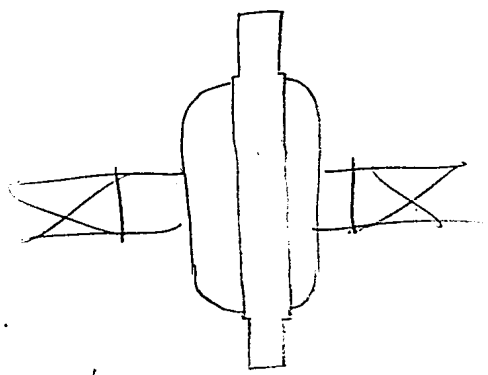
Possibly steam jacket vented by vent, steam evaporated or just Hot Air —

62 - Callipers by a round drawing showing high and low work of blanks then place Hammer Mandrel press High end, X S E & West, Mandrel up press & examine spelling tab many high ends on one side of press -

63 - Lay blank on hot plate use hot conical rollers under great pressure, roll & bank out to same thickness -

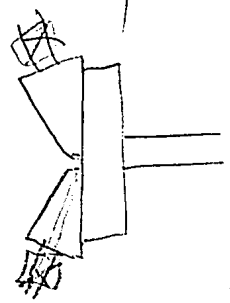
64 Grind one face against Emery wheel or grinder true up by Diamonds then clamp in chuck against a face plate Chuck claws or taper ring - face with Carborundum wheel or turn with a diamond

65 =



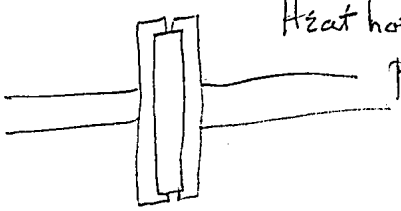
face edge + sides in 1/4 inch
both sides or one side to get
a true bearing to face by —
+ turn both sides with diamond

66 —



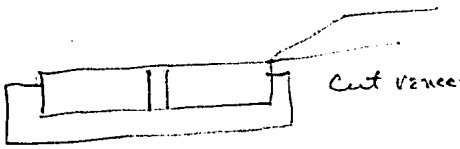
Conical rollers
true up Disc

67 =



Heat hot, put on bag pressure + release in op direction

68 -

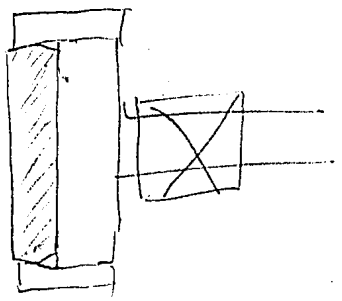


cut veneer off to true blank —

69 = Put in Top + Bottom of press
One each top + bottom of defects
to permit alignment of platten
with uneven blanks

70 - Lift ram Ball joint in Top + Bottom of press to permit alignment.

71 =



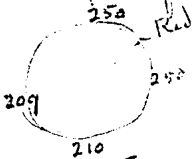
Blank (bevelled) two ways — use chuck + tighten by the Taper and Edge, face width diameter) + then turn off face other side — 400 Rev min — grooves 2 Cone belt Countershaft

72 — Press a cake 10", 6 long Chuck + saw off disc blanks with diamond saw Could use a steam operated Cylinder for Mould.

73 Use square mould + pack Powder same as we pack Iron packets, then Cut or punch out discs

74= Print turn heat off, wait ½ min turn mould ½ way around + heat + press, then cool -

75 - Calipers blanks, put Red mark on edge of center of high side,



closed 66 N S E + West,

76= NEW = there is a drag in jacking to keep up the pressure in cooling. The more the pressure go down from malleation, then bring it back, sometimes it goes away down before they notice it -

Now suppose 3 sides had most of the pressure + on 1/4 had light pressure. The fall on cooling

might not be enough to loosen the grip on the heavy pressure joint but on the 1/4 of area relieve pressure to light the grip is small & it will not stop veneer from contracting hence Cracking. The only safe way is to not only stop these loss of grip by not losing pressure but would be good to actually increase it -
This probably Explains why some men get better % than others. Even smaller of blanks would stop it,

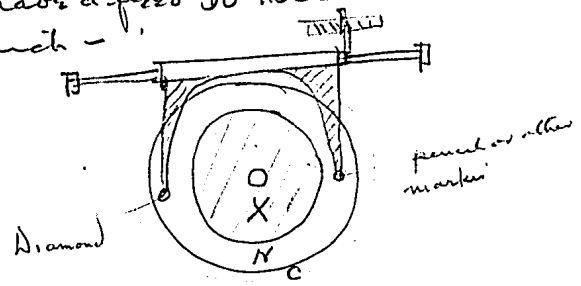
44 = I think that if pressures of a defendee is say 1000 lbs that the moment we over approximate above slightest tendency to face that it would be well to group events 1100 lbs to be safe and this would prevent loss of grip on contact surface

78 24 Veneers 15/1000 Each
Can deform down To 8/1000
drop To 22/1000 —

If we have 24 Veneers in press
15/1000 Thick This is Total of 360/1000
of Veneer

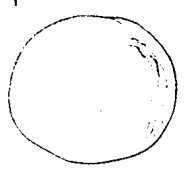
If deformation is necessary to Correct
wherein Calliper of blanks 8/1000
on one edge 22/1000 on the other
it gives a deformation to Each blank
of 28/1000, or 336/1000 to the
12 blanks —
This requires thick centerline of top
& bottom to allow alignment of
platens —
If Blanks more than 22/1000
thicker at one place than the
other is bad 22/1000 is the limit
and it should not be more
than 11 To 12/1000 —

79 To test blanks for thick + thin edges - rotate blank - have a feed 50 threads or less to inch -



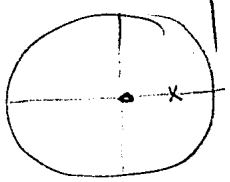
X Top plate
C platter
N Record - held down flat,

When low side passes under Diamond the pencil comes down + marks



The idea can be worked up -

80= In loading use thin



removable metal Separator partition
Weigh 4 portions of wood fibre put
on in each - Remove X - then
whole will be even to start with.

81 In embossing the ~~tits~~ on working
mould connect the tits together
by a 002 to 004 high 10/100 wide.-
Emboss - On printing this will
hold the veneer while contracting
+ in final Edging come off +
Dez of bosses have not been changed

82= Cracks never start on second
part, but only on smooth,
its because Veneer is not held
on Cooling - No 81 should fix
this
To stop it at transfer, make a
Chaser with 1/8 wide of ring
teeth 150 threads & chase the
Varnish plates clear to edge
this will hold it in pieces
When Cooling on printing
it will not show -
We could chase smooth part of
record also, & Miller could
touch all new ones -
On transfer plates as they are
irregular can use an advance -
Back Make on recording Machine
see who can manipulate for ring for
ring at Edge & use thumb if foreign

83 – Possibly we want to run Varnish plates up gradually as possible to reach the rubbery state, then there is no danger of segregation of Pearl, Paint or Gold. Then can go all over Think this the trick to get even Contraction & reflection —

84 = Making Veneers —
Used small granules of following in Reg Varnish ~~—~~ poured from Reg Var a small quantity into a separate dish added the Chemical & stirred it then poured on one of the little plates —
Let all stand in air over night & then gradually heat up to 185 —
After being all night in none more fired

Used Co SO4
Fe Tannate
Fe Picrinitric
Cu Nitroprusside
Cu Oxalate
Fe Sulfocarbolate
K Sulphite
Ba Sulphide
Aluminum Chloride
Antimony Chloride
Cu Cy
Sulphide Zn
Cu Chloride –

Practically all except Rubbery
around 145° Fahr

Sb Cl very rubbery
Al Cl next "
If pencil pressed in either no hole
of deformation left, not true of all
the others they come back slowly
+ leave a slight mark,

Sb Cl is the most abnormal

of the lot, AlCl made lots bubbles - SbCl acts + apparently precipitates, turns from black to brown surface not flat or shiny seems thinner than others, there are internal bubbles which cause up + down a wobbled surface of little hills -
All others shiny - Req the most SbCl least AlCl next,

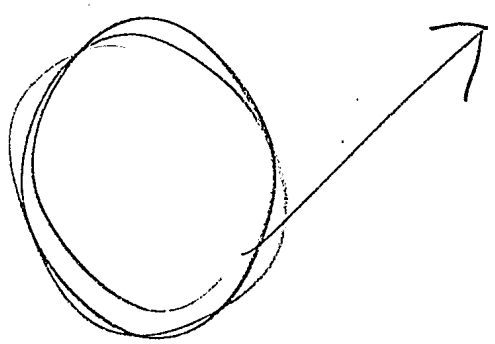
At 160° SbCl still very rubbery all the others very stiff rubbery + all about the same - AlCl probably a shade harder.

185° SbCl still abnormal
Still Rubbery
Req + CuCy blistered.
Cu Nitroprusside all blisters
Ba Sulfide next hardest to AlCl.
Req + CuCy one other + no bubbles
K Sulfite Cold Cuts Tough, head holes
Separate from plate hard
BaS cuts little tough Separates OK

AlCl Whitens plate, Cuts semi Tough
Comes off hard –
CuCy seems tough & powder good
Zn S " "
CuCl - brittle dont seperate good
Fe Piconitric brittle, sepo bad
Fe Jaunate " " fair
CoSoy Brittle sepo good
Cu Oxal " " only fair
Fe Sulfocarbolate Semi tough sepo fair
11 Reg brittle sepo good
Ce Nitropruside Semi tough Cant sep bubbles
Antimony Chl Trichl - Tough like
leather, flexible like Letther Cold
Unmarked on celluloid Easy
fold it, KOH dissolving also at
Water no effect.

While SbCl3 if coppers than celluloid
it Cant be scratched by fingers
nail - and with a Knife Cant
scratches Reg bad dont
scratch SbCl. its tough –
dont chip out when Knife pressed

Possibly anhydrous $LiCl$ or $CaCl_2$ would not



over it, I used altogether too much $SbCl_3$ It's probably probably lengthens it,

If not $SbCl_3$ is precipitated by water, giving white ~~ppt~~ ppt "Algaroth" =

$SbCl_3$ dissolves in alcohol there is a precip white from water in alcohol I follows the precip off get clear & then added water & white precip came down +

Evidently when I added the $SbCl_3$ to Reag Ves it took out the water + formed a precipitate in the Vessels The white pp Turned at from black to brown Comes off plate hard

Something in $SbCl_3$ Juice —

S Battery -

Think Hypo would do as good for deoxidizing, but expensive.
Clean after operation with 1% H_2SO_4 or perhaps HCl if burnished in bbl my Experiments always Clean off flake nicer bright Nickel Coat will Clean with HCl for cleaning very little of H_2O_2 operation but more to load H_2SO_4 used

Can use the 1% acid just enough to make mix little thinner than a mush

Can float most flake off by old way of letting water up from Carbonic box for 1 after the C Sug flake Coat be removed out the H_2O_2 no longer OK for reuse —

Next page

85 = Further Experts show that $SbCl_3$ dont toughen What it does do is to delay the final hardening, by running all up to 18d 19d after stripping from plate, they were all bright

Ferric Chloride was the only one of last lot that was remarkable it Came off the dush perfect not sticking as all others did —

Mixed pinch of each in Beg

Sb S.
Hg S
Cu S
Sn Cl
Bi Salycilate
Ferric Cl
Pb Hypersulphide
Sn Bi Sulfid
4 Strengths of $SbCl_3$
Beg -

I notice when I pour the varnish

Battery -

Contrary what texts are made of Hoff @ operated meant be looked in a cyanine to see if it to green or not,

Perhaps Hoffman's white ash to advantage out something forming a double salt,

Perhaps other salts which tend to form double salts will take of further things will after Hoffman has been washed out -

Next page

on the little plates, that the SbCl3 shrunk very much in thickness, Thinner seems on 1/2 thickness of all the others

at 135, all were condemned the rubbery state except SbCl3 changed very very weak SbCl was slightly rubbery - the other 3 SbCl3 not touched

160 Tested all condemned rubbery Except Strongest SbCl3

[illegible] after having at [illegible] all hard - Ferric Chl has dull appearance -

Ether taken out has had most bubbles, + strong SbCl3 not.

Put them all back a piece 1 to 2 hours around 190 To 200 - all reached hard SO3 Condensate all hard - + about the same in properties -

From these experiments it is

Battery = New Scheme

To make our reag $Ni(OH)_2$ proper use say 1 to 3% H_2SO_4 acid — dry the $Ni(OH)_2$ + then just neutralise it with the acid solution dampen it so to speak then practically all the acid will go in the pores & left all day then it can be washed out leaving the $Ni(OH)_2$ proper, any degree of porosity can be determined test it. ——

I noticed when I boiled on Nickel Fe from old cell by HCl + by H_2SO_4 — + HCl + a little HNO_3 latter gave no black film of coal stuff — whereas H_2SO_4 gave some —

Easy to see that the Time & temperature as VERY IMPORTANT

to get a tough veneer don't go above 200 & don't heat to long at high temp, & 4 or 5 hours & perhaps longer is the time that is required for 1st stage in Rubbery condensation around 140 for 1 or 1½ hours 2nd stage in hardening & drying off alcohol etc, if not stopped here, veneer is tough in 3rd stage to heat & bottle 190 @ 200 for say 1 hour

When get a new change. Schedule to get tougher finish & stop & fiddle at 160 stage,

I made some very tough & Transparent stuff from using an indifferent of formaldehyde in phenol then dissolved in water 24 hours — This ought to be a good solution to Varnish

86 = I feel sure we can make 2nd prints by using condensite Veneers on metal + bring to rubbery state + just before pour on mixed with removable rim - Then print by using hot water, don't think it will need more than 150° or less -

Could also use 1/4 g face mounted on halide sheet, flow a condensite on g face remove to halide, print, remove + plate,

I think the resin condensite veneer will take negative OK if temp has been kept low

When I arrive Home These are things to 1st Receive attention

1st Make experts old Cell mixer operated by 6 def Chemicals Wash + treat with H_2SO_4 – Acetic HCl HNO_3 + Aqua Regia Ni crushed + superheated screen – test in small Tubes Sep flake by Chemical Ox + Reduction

2nd Reach bat tray + make mechanical tools

3rd Hand men making Even Caliper blanks

4 Extra flake Cyn Varnish + Cry need Oven Reach tube to get safer Temp – 190°

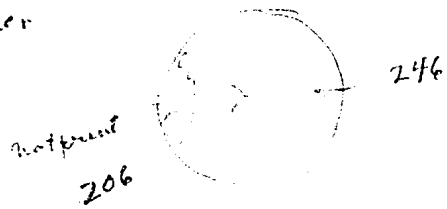
5 Floco Condenser with ring of glass or porcelain or metal held in Metal ring – Use ↑ just beyond Rubbery range Use 150° To prevent

6 = Text phone coax ~~X~~ cylinders

7. Music

8 Violin ~~X~~ Suit –

87 = Inspection of Permit + Inspection Sheet by Moore, Check List Blanks, Site permit comes up from Hooker and area since Nov 1st, other



Nearly all permits have been permits approved each other

Nearly all Cracks start

Illus

from Edges or relief

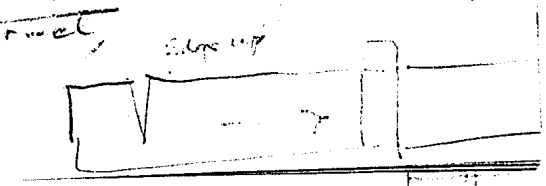
are always on a plane showing the print, Not stripped

3 points or more Locked to till because doubt in the Germander over prices these should be ground out,

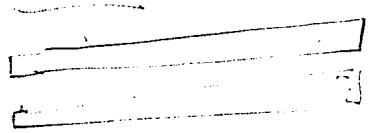
Where and what if Opposite each other the diameter of shank is correct at this point,

Cracks are widest on Top, some Scrape not Bottom shank Scratches follows are down to blank color may - but the pieces very narrow & cleanly to be seen

Cracks caused To be removed by a Clinch at Edges in grip & removed to base To Contract,

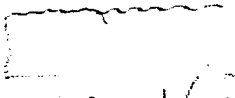


Two general Co gave
poor points Exactly same place =
different Kind, following groups
showed marked want of



10½ pound Caliper when according
to Either person test or place
Here to another
chance for Inspection in
German dept —

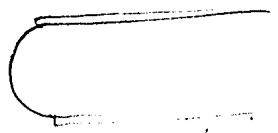
Caliper'd when more of
Edge of ⅛ + the center of
[illegible]



Yet Caliper only 1/3rd of a
1/10000 thousandth
inspection —

It looks as if all blanks that will not separate can be either double turned or separated & or double transferred, that has cracks could not double transfer but can be turned & retransferred on

Notice one transfer that has squeezed out round -



Now this shows bad mixing too much in Hammermill fibre -

Result of Experts with Varnish
Reg + Reg with some Viscous
Semi Condensate in — for use in
submarine work —

We can use 1/4" glass, or turned
up porcelain supported in a sheet
mould — Flow the glass, porcelain
or metal with a ring around it
like old submarine Cable Insulate
Remove ring after drying — Then
put it in Water Jacket Oven
~~XX~~ & bring up to 145° @ 160°
for 2 or 4 hours or less — Then
Mount in supporting Holder &
Print at about 120 to 135, Coat it,
Then Graphite it & Electroplate
by Specially filtered Varnish
+ putting in | clean Oven, filtered
air draft Then a no heat for
a while, We should be able to

discard the d—d Calculated

Think the Semi Condensate Vaseline like muck or a muck not acted on by G/F will be best to help grind filling — not sure, try —

Reg & Reg with Semi Condensate muck

2 hours at	117° Fahr
1	120°
½	142°
½	160 —

Too soft yet Can't strip from plate but the one with Condensate muck Comes off

Sections of both when cold are flexible like Leather, The muck one much more than without muck

When Very cold Reg Cracks showing that at 160° would answer for submarine — But the mucked one dont crack — but remains flexible + Too soft for submarine

After ½ hour Reg Can be stripped some — Top fairly hard, underneath rather Leathery

½ hour more 178° Fahr Reg seems hard enough for aircraft — sticks hard to plate, Can't pry off but Mucked Var comes off — but hard,

After getting Cooler Reg comes off best hard,

I made the copy Semi Condensate by Condensing Phenol with Very small proportion of formaldehyde, its like Vaseline but quite not so thin —

There is a big difference between mucked Varnish & Reg

Believe we can work easy Var on Ovens at 180° Fahr

About 160° is OK for submersion mucked Var - Very flexible, Reg OK -

Keeping it at 180° 3 or 4 hours more it runs unnecessarily hard

180° Fahr Mucked stuff taken impression of 10 ℄ piece OK
& looks as if mucked stuff too
Graphite OK -
Only one defect & that is top of Under Very much harder than the bottom,

142° Fahr Veneer takes graphite OK

Records sent to Ft Myer
april 14 1914

Prints
Def in Calliper
004
014
009
007
015
003
038
033
018
003
014
010
019

Durrelden Experts on Contraction
& Expansion Reg Condensers
Tancar

Taken	Contracts	
192°	.0345"	} 0.001 per degree
175°	0329	
150	0320	.00036
127	0309	.00047
100	0299	.00037
79°	0293	.00017

Vermuth Takes permanent set as low as 125° @ 130 with only 10 gram load to ½ inch strip 2½" long but time must be allowed

On cooling the contraction from 135° to 121° after this it contracts 0006 in 2½" when the 100 after 13 minutes more = Tancar at 100° is Enormous, about 200 the a Rubber jelly

Extended 1916 Book 3

Wages + Gas Exp

$1016 per day

Blank 5.8.

Wkg M 1.0

68

2000	64.8
3000	40.7
4000	32.2
5000	29.8
6000	23.7
7000	21.3

2000 | 10160.00 (5.8 — 58 / 64.8

3000 | 10160 (33.9 — 68 / 40.7

4000 | 10160 (25.4 — 68 / 32.2

7000 | 10160 (14.5 — 68 / 21.3

5000 | 10160 (23.0 — 68 / 29.8

6000 | 10160 (16.9 — 68 / 23.7

Transfer Blank 5.8

25

12500

748.00 / 268 / 1016

748 × 26 = 4488 + 1496 = 19448

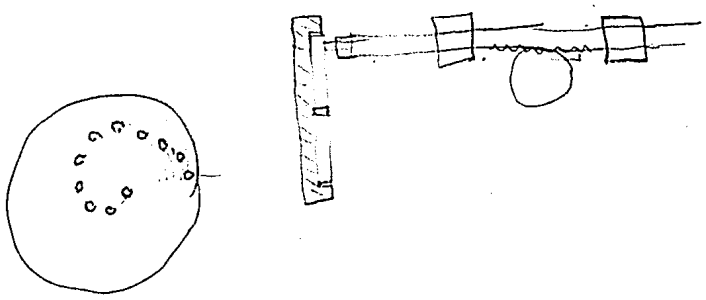
268 | 6981 / 2629

6981 − 536 = 1776 − 1608 = 168

68 × 3000 = 204000

7000 | 204000 (2 — 14 — 40.00

26 | 6981 (268 — 52 — 178 — 161 — 221 — 208



Notebook Series -- Notebooks by Edison
Notebook, N-14-04-26

This notebook contains dated entries from April and May 1914, but it may have continued to be used as late as July. The entries, which are all by Edison, pertain to experiments aimed at the rejuvenation or "regeneration" of used storage battery components. The entries toward the beginning of the book deal mainly with the nickel flake and nickel hydrate mix from old positive electrode "tubes." Included are lists of chemical compounds, along with results of tests performed on cells constructed with various regenerated tubes. The entries in the middle of the book deal with the iron from old negative electrode "pockets." There is also one page of crossed-out notes on the manufacture of disc records. The battery experiments bear sequential numbers, 125-141 and 142E-240E. Experiments 129-184E involve various chemical compounds that were prepared by Ludwig (Louis) Ott and used to treat old nickel. These chemicals are described in N-13-10-05. Some of the cells produced in experiments 142E-240E were apparently transferred to the Edison Storage Battery Co. at Silver Lake for continued testing. Their subsequent performance is tabulated in N-14-12-14.1, and the sequence of experiments is continued in N-14-12-03. Inserted into the book are two reports from July 9, 1914. One, addressed to Edison by John V. Miller at the Edison Chemical Works, reports on experimental pockets prepared for experiments 240E and 250E-252E. The other, addressed to Robert Bachman, describes several experimental pockets prepared for Edison. The front cover is labeled "Somewhat Important" and "Regenerate No One." The pages are unnumbered. Approximately 120 pages have been used.

April 26 1914

Regeneration of Nickel flake from 4 yr old cells that have gone low in Capacity

I note that flake & green from use of glycerine & KOH as desulphurizing agent, on treatment with acid when glyc & KOH are washed out act different according to acid used –

2% HNO_3 gives clear solution only little green color

2% H_2SO_4 ditto

2% HCl gives yellow green Milky liquid & does not get clear decolors Ni but on filtering. Muddy yellowish Colloid continues to run thru, apparently no let up, even after acid gone

The muddy deposit treated with HNO_3 becomes green & clear showing lead is mostly metal. The clear acid precip by ammonia shows a small amount of white yellow iron — precipitate Fe_2O_3 —

This is true with 1% HCl & 2% HNO_3 — but not bad like 2% HCl

Evidently HCl has some action that the other acids haven't.

The only one that is perfectly clear is H_2SO_4 —

I am separating 4 batches of 4 yr old mix from tubes — These have been put in 5% 10% 15% & 20% glycerine & water & 3% KOH or NaOH in each

5% didn't disintegrate at all -
10 had more disintegrated
15% About half
20% all were disintegrated
Kept them in flasks on hot plate with 1/8" asbestos between flask & Hot plate. They used great deal of Graphite

Lots Nos

129 - Considerable pieces not broken up

132 Nearly all broken up

130 Nearly all broken up

131 - 9 pieces

136 - quite amount of calcite
& ammonium

Thus - K formate &
it may take out
aluminia ~~etc~~.

I now put 2% HNO_3 on
L.Ott #

136 NH_4 powder considerable calcite
126
127
134
135
125
128

They all have been well
washed - 10 or 15 fresh
waters — put aside
— Mix of Na & flake —

No colloids that run through filter
in any of above, take #8 in
glycerine ROH. mix -

All above about same
degree of granulation

The least green is from 128 —

of the glycerine Series —
only HCl, shows ferric
Iron — HNO_3 H_2SO_4 &
1% HCl 2% NO_3 white flocculent
precipitate alumina —

Apparently to the HNO_3 that
takes out the Alumina
H_2SO_4 takes out some

But HCl + HNO_3 apparently don't
take out ferric only the
white pp,

It takes 3 or 4 hours for
the Alumina to come down

None of the precipitates
were green except glycerine series

Salicylates can be washed free of Na or K Salicylate — approximately —

$HNO_3 + H_2SO_4$ + glycerine are the best to work no emulsoids

of the solution (acid) decanted off from precipitate Number Except glycerine series —

127 & 134 ~~are~~ have the most but it will require longer time to be sure —

---

129 - acid oil followed off & H_2O very large White Al sic precip - has a reddish tinge showing ferric —

Offs [illegible] —

Hot

129 —	50 grms	5 grms glycerine	100 cc	3 grms NaBH	
130	"	10	"	"	"
131	"	15	"	"	"
132		20	"	"	"

56 Hours

Left on hot plate, with asbestos fibre between in flasks —
Put the cohate of the 100 cc in each flask —

133. K Hypophosphorus —

~~134~~ 134 K Sulphide, Liver of S

135 Na Salicylate

136 K Formate — White precip NH4

137 Na Formate

138 Glycerophosphate Soda

Offs #

139 Sodium Paramedate

140 Paramidobenzoyl diethylaminoethanol

141. glucose

128- 500 cc 20 glye 3 NaOH. Cold

125 5 ~~00~~ gly "

127 15 glycerol "

126 10 " "

I have sent
129 130 131 & 132 separated by me

After drying I screened green & flake
thru 20 mesh —

Had to crumble flake a
little to get 25% that stayed
on 20 mesh —

Green left only little flake in
Grave Receptacles to Broken
Ends to be made as follows

2 tubes old Mi old flake
2 " New Mi "
2 " old Mi new flake

134 & 135
give big yield of
grain
100 grm
whereas
126 & 127
give very small
yield 1/-
probably lost in
the sieving.
50 grm

Note scarcely any Alumina in 135 —

Lots of broken ends of tubes & Caps in all —

134 - not well disintegrated, hard to separate flake from matrix connect in goes over each flake — It will be difficult Comely to separate —

135 - disintegrated v. easily well — Hard coach in out of flake Lots Cortical on attrition, Final rem. Matrix fiber —

136 = family disintegrated after acid treatment flake yellowish — but only some flakes —

I think most white precip
Supposed "Cl" comes out

128

I note that 20% sol of Chlammonia
with tube pieces in dewaves
Ni 3 or 4 times faster & more
of at than the 2% acids
Ecew 3% ——

None of the 2% acid sol
HNO_3 H_2SO_4 HCl & Aqua Regia
disintegrate the ni tube pieces

Following Disintegrate
Ni cylinders from all Ingredients

All Dissolved Solutions

⊕ 1 = K Carbonate – partial in 24 hours
2 K Bichromate slightly in 24 " no Ni dissolved
⊕ 3 K Oxalate not disintegrated Much Ni Dissolved
⊕ 4 K Paraldehyde " "
⊕ 5 K Arsenite, all disintgd some Ni dis 24 hours
It breaks up Ni To Colloid + all runs thru filter.
⊕ 6 K Benzoate not disintgd —
⊕ 7 K Chlorate "
⊕ 8 K Sulphite, partly disintgd, much Ni dissolved – 24 hours
9 K Cy – Totally disintgd – dissolves much Ni 24 "
10 K Phosphate Not disintgd
11 Hydrosulphite, Totally disintgd in 24 hours Green Sed
Coats Ni Off with Nickel – if boiled all the
Ni is reduced to metal —
12 K Bitartrate slightly disintgd, sed greenish
⊕ 13 K Nitrite ½ disintgd
⊕ 14 K Chloride ½ disintgd, Solution Light green
⊕ 15 K Sulphate ⅓ " —
16 K Iodide – Completely disintgd in 2 hours
no Ni dissolved – Hard to Wash free of Iodide —
17 K Permanganate ½ disintgd
⊕ 18 K Bisulphate disintgn starts in 5 min nearly
all disintgd – ¾ disintgd – 24 hours Sed green

Duplicated
2 = D 72 hours

16 – 72 hours —
Sediment brown —

19 – 72 hours

20 – 72 " Trace of Ni

22 72 " – 70 To 105° Faint no ni dis

27 36 Some ni dis + some blocks changed to green

16 – no ni dis, hard cream ppt

Ⓓ 19 K Ferrocy.: dissolvd in 2 hours very Little Ni dissolved – (Green)

20 K Sulphide dissolvd in 48 hours no ni dissolved

21 K Manganate ?

22 K Hypposulphite Completely dissolvd 24h no ni dissolvd

23 K Chromate ?

24 K Arsenate ?

25 K Benzoate ?

26 K Benoxalate – Solution Very green –

Ⓓ 27 K Hypophosphorous. dissolvd 24 hours on dilution with water gave much ni dissolved

28 K Propionate slightly green

Ⓓ 29 K Ferricy 3/4 dissolvd

Ⓓ 30 K Lactate not saturated sol very green Completely dissolvd in 24 hours,

Ⓓ 31 K Ethylsulphate not saturated 3/4 dissolvd

Ⓓ 32 K Persulphate 3/4 dissolvd

Ⓓ 33 K Ethylsulphonate, Tubes covered with brown flocculent coating Brown flocculent precipitate

⊕ 34 – K Carbonate dissolved in 96 hours
very little Ni dissolved

⊕ 35 K Formate not calculated Dissolved in
48 hours no Ni dissolved

36 K Urate Light green

⊕ 37 K Citrate Completely dissolved in 24 hours
solution Brown great deal Ni dissolved
Colloid Ni runs through filter –

38 K Salicylate, Completely dissolved in 30 hours
on filtering no nickel in filtrate but a
large precipitate formed is soluble in
a large amount of cold
& Contains some Ni Very different
to wash free of salicylic

39 K Chloroacetate smells
of Chlorine strong –

Dup

43 — 72 hours — Traces Ni — Temperatures from 70 to 125° Fahr —

⊕ 40 - K Lactophosphate not sat
Color turns green - probably reduced
dvalored if concentrated no Ppts
are all dvlgd

⊕ 41 K Sulpho Ethylate not sat 1/2 dvlgd

⊕ 42 K Metaborate 1/4 dvlgd

⊕ 43 K Sulphocyanate dvlgd 96 hours
trace of Ni dvalored

44 K Ethylsulphuric 1/2 Dvlgd
45 K Pertcarbonate 1/2 "
46 Seignette Salt Light Blue ppte
some Ni dvalored gels very slimy
Colloid runs thru filter Ng
⊕ 47 K Bromide 1/2 Dvlgd
48 K Valerianate not sat 1/2 Dvlgd
49 K Cyanate, dvalores much Ni
50 K Jodinate dvalored Ni
51 K Benzene Disulphonate 1/2 Dvlgd
⊕ 52 K Sulphobenzoate 1/2 "
53 K + Fe Oxalate Very little dvlgd
much ferric hydrox formed

54 - Na bicarb - -

⊕ 55 Na Acetate ?

56 Na Cy dissolves much Ni

⊕ 57 $Na_2C_2O_4$ Oxalate Sol light green

⊕ 58 Na NH_4 phosphate "

59 Na Hyposulphite dissld 48 hour no Ni dis

60 Na Bromide sol light green ½ dissld

⊕ 61 Na Arsenate

62 Na ~~Phosphate~~

⊕ 63 Na phenylate ½ dissld

⊕ 64 Na Sulphite Dissld 48 hours no Ni dis

65 Na Benzoate ?

66 Na Carbonate ?

67 Na Sulphide ¼ dissld

⊕ 68 Na Cl - flocculent precip tinge of green

⊕ 69 Na Bisulphate nearly all dissld in 4 hour dissld in 5 hours, but solution green also green

⊕ 70 Na Borate ¾ dissld

71 Na Salicylate traces brown oxidn of Salicylate dissld 48 hours trace Ni dis

⊕ 72 Na Nitrite ¾ dissld

⊕ 73 Na phosphite - ?

59 - 36 hours - no rise of temp ? as in K Salt.

64 - 36 "

71 - 72 hours no Ni dis but hard to wash

74 [illegible]

82 72 hours temp 70 to 140 Fahr
entirely too Exp requires 600 cc for
50 grms mix -

74 - Na Silicofluoride - flocculent ppt
white - is this Alumina -

⊕ 75 Na fluoride -
⊕ 76 Na Biphosphate - tinge of green
⊕ 77 - Na Acetate, sal light green flocc ppt green
⊕ 78 Na Manganate 1/4 dissolved
⊕ 79 Na Chromate
⊕ 80 Na Vanadate
81 - Na Sulphocarbonate - dissolved 48 hours
no coagulating much precipitate deposit.
Colloid - dissolved

82 Na Peroxide - all dissolved 48 hours
green very marked Act. of Black left
on filter paper H_2O_2 3% decomposed

⊕ 83 - Na Butyrate
84 Na Bichromate 1/2 dissolved
85 Na Urate - 1/4 dissolved
⊕ 86 Na Phosphate Substance
87 Na Benzine Sulphonate 1/2 dissolved
88 Na Phosphotungstate, satin green

Rep

95 – 72 hours no ni dis hard to wash

113 – 24 hours

⊕ 89 Na Cinnamate
⊕ 90 Na Trimethoxy
⊕ 91 Na Lactate D slgd 48 hours Sol tinge green
92 Na Stibic 1/2 D slgd
⊕ 93 Na Benzoate
⊕ 94 Na Mg Tartrate 3/4 D slgd tinge green
⊕ 95 Na Sulphanilate D slgd 48 hours no ni deposited
96 Na Sub Benzoate 1/4 dis lgd
⊕ 97 Na Chlorate
98 Na Valerianate
99 Na Sulfoethylate dis lgd 48 hours Sol very green
100 Na Alumenate
⊕ 101 Na Sulfovinate
102 Na Biborate 1/2 D
103 Na + K Sulphate D in 96 hours No ni dis
104 Na Bitartrate D 48 hours Sol very green
105 Na Ferrocy D 48 hours some ni dis
106 Na Tannate
107 Na tetra oxalate D 96 hours Sol very green much ni dis
⊕ 108 Na Peroxalphate D 96 hours much ni dis
109 Na Bismuthate
110 Na Bromate D 96 hours no ni dis
⊕ 111 Na glycerophosphate D 48 hours not saturated
⊕ 112 Na Bromate 1/2 D.
113 H_2O_2 dis lgd –

Evidently with proper process, only 5@7% need be discarded 93 To 95% will be in shape to use again —

100 mesh screen will screen out all the fine Ni from cake leaving very little fine flake —

Done Enz —

After washing & separating ready for cast some fine Ni in flake —

134 — 12.69 grm lost — 78.240 Ni / 9062 fl / 87302 — 100g

135 — 15.12 grm lost — 71.70 Ni / 1318 / 84.88 — 100 G

136 — 13.11 grm lost — 70.112 Ni / 16770 flake / 86882 — 100G

126 — Equiv 14.22 lost — 3537 Ni / 752 flake / 42.89 / 8578 — 50 G

127 — Equiv 12.22 — 35.092 Ni / 8885 flake / 43.977 / 87794 — 50 G

125 Equiv 11.76 lost, 36.45 Ni / 767 flake / 7412 — 50 G

Tried Kay 2% HCl. 10% MeOH
to clean flake — apparently
MeOH cleans it best.

1st Taken to Bradenton 2 inches

	1	2
	847	843
	873	867
	860	857
Hat, 1st	460	467
1st after shot	800	800
2nd "	693	697
3rd "	653	660
4	640	647
5	607	610
	610	613

C O

2nd Sample - 3 inches

	827	830	820
	853	853	847
	870	863	860
Hat	633	627	600
1st after shot	600	577	550
2nd "	550	537	517
3	537	460	
4	503	487	417
	507	490	473

C O

Shared Cakes

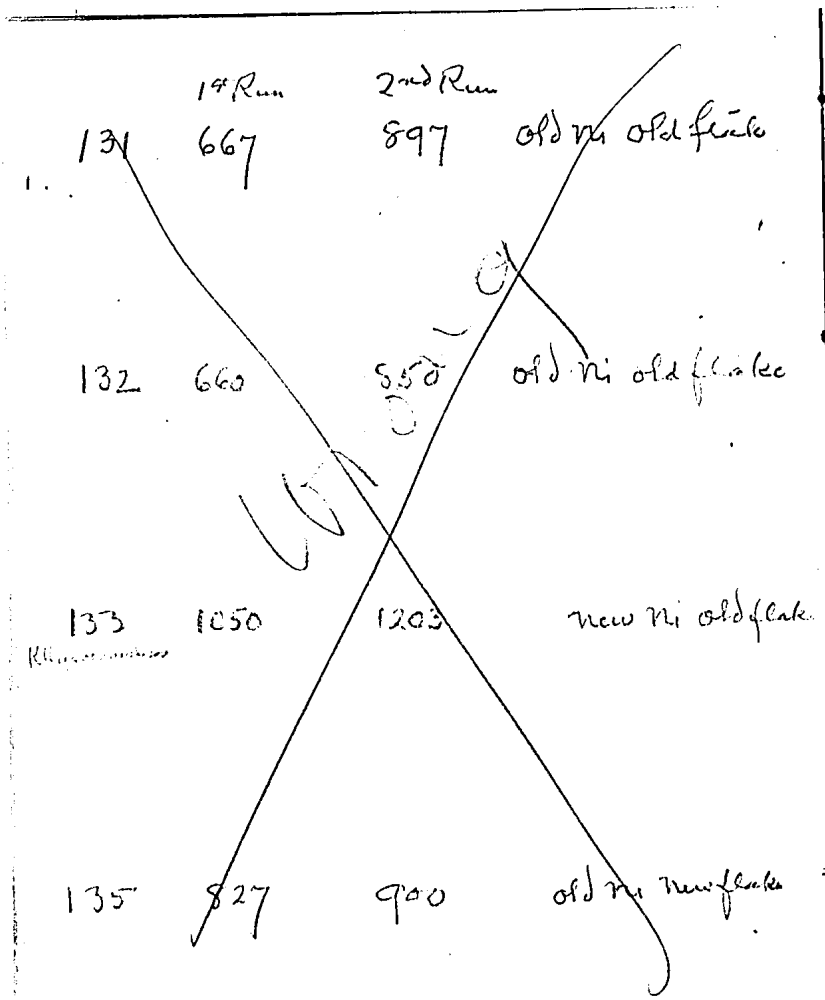
129- Loaded Req 4 flake 26 Ni
Req Cramps

May 2nd 1st Runs —
New flake uppercoved old ni old flake
160 Mah —
New Ni 383.

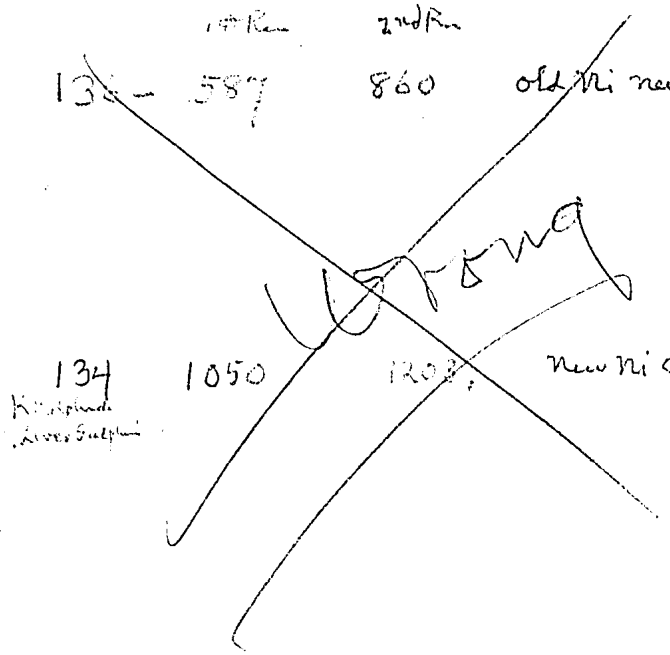
Big Cat — 2 Offs Running

#129 —	Old Ni Old flake	1st	667	660	7125 — 7055 —
4 fl		2	897	850	
24 Ni		3	873	830	
233		4	830	780	
7.125 —		5	777	727	
		7	797	747	
129 —	New Ni Old flake	1st,	1050	1050	7395 — 7325
224		2nd	1203	1203	
7054 —		3rd	1200	1200	
		4	1223	1213	
			1207	1193	
			1223	1220	
129	Old Ni New flake	1st	927	877	7382 — 7340
252			900	860	
7.395 —			890	843	
			873	830	
			837	797	
			863	827	

	1st Run	2nd Run	
131	667	897	old Ni old flake
132	660	550	old Ni old flake
133	1050	1203	new Ni old flake
135	827	900	old Ni new flake



	1st Run	2nd Run	
134	1050	1203	new Ni old flake



238 D } 6 864 ←
242 D } 6 910

245 } 7270
240 } 7265 ↖

262 | 7275
254 | 7223

232 | 6957
225 | 6960

295 | 7328
248 | 7415

254 | 7347
261 | 7310

C0

130 Old Ni old f
10% glycerine

1st Run	643	648
2	833	843
3	813	823
4	773	780
	787	793

New Ni old f

1st	1007	990
2	1183	1203
	1183	1200
	1170	1187
	1190	1207

Old Ni new f

1st	643	627
2nd	850	857
	840	850
	813	827
	833	850

C0

131 Old Ni old flake
15% glycerine

1st Run	623	657
2nd "	805	833
	790	810
	757	770
	747	774

New Ni old f

1st	967 -	983
2	1157	1190
	1187	1190
	1177	1180
	1207	1210

Old Ni new flake

1st	803	809
2nd	817	823
	830	823
	807	807
	823	836

132 Old ni old f 20% Glycerine	1st Run 2	483 673 677 673 677	477 673 690 697 700
New ni old f	1st 2	1007 1197 1200 1203 1247	1003 1193 1200 1203 1247
Old ni new f	1st 2	467 - 677 690 697 723	450 647 673 673 700
133 — Old ni old flakes K Hypophosphorous	1st Run		
New ni old flake	1st Run		
Old ni new flake	1st Run		

For Dissolving Flakes from Slides

174		Acetic Acid
175		Benzoate Soda
176		10% HF in Lead
177		10% Sol Para-Amidophenol
142	Ammonium	Acetate
143	"	Benzoate
144	"	Oxalate
145	"	Sulphate
146	"	Tartrate
147	"	Citrate
148	20% sol	Formate 5 grams
149	"	Hyposulphite 6 grams
150	"	Nitrate
151	"	Phosphoric —
152	"	Sulphite
153	"	Hypophosphate
154	Ferrous	Ferrous Chloride
155	Ferric	Ferric "
156	Lead	Nitrate
157		

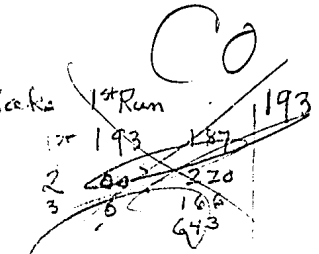
158	Calcium	Chloride
159	"	Nitrate
160	"	Acetate
161	"	Chlorate
162	"	Citrate
163	Chromium	Acetate
178	"	Nitrate
164	Copper	Sulphate
165	"	Acetate
179	"	Nitrate
166	Zinc	Sulphate
167	"	Hypophosphite
168	"	Acetate
180	"	Nitrate
169	Magnesia	Acetate
170	"	Chloride
171		Nitrate
181		Citrate
182		Fluoride
172		Hypophosphorous
183		Phosphate
173		Sulphate
184		Sulphite

Old Ni new f 271 - 7605
" 256 7607
New Ni old f — 250 - 7281
250 - 7282

Old Ni new f 257 7272
271 7350

New Ni old f - 264 7432
265 7458

134 Old Ni old flake 1st Run 1193 1187
K Dulphide (Lirm S)



New Ni old flake 1st Run 703 690

Old Ni new flake - 1st Run

135 Old Ni New flake 1st Run 533 523
2nd 703 703
Na Salicylate 707 707
700 697

New Ni Old flake 1st Run 963 977
1103 1117
1150 1173

Old Ni New flake 1st Run

Old Ni new ff 272 | 7360
250 | 7223

New Ni old f — 263 7512
264 7522

136 Old Ni New flake 1st Run 727 707
K formate. 2nd 750 720
723 690
72

Neco Ni Old flake 1st Run 1010 997
1110 1128
1147 1163

Old Ni neco flake - 1st Run 720 697

137 Old Ni old flake 1st
Na ferrocy

New Ni Old flake 1st

Old Ni New flake 1st

138 Old Ni old flake 1st
Na Glycerophosphate

New Ni old flake 1st

Old Ni new flake 1st

139 Old Ni Old flake 1st
Na Bromate

New Ni old flake 1st

Old Ni new flake 1st

140 Old Ni Old Flake 1st Paraamido benzine sulphonate		1	2
New Ni Old flake	1st		
Old Ni new fl	1st		
141 - Old Ni old flake Glucose	1st		
New Ni old flake	1st		
Old Ni new flake	1st		

244-7.097

260 7.443

230 7108

125 old N. of f — 2nd R — 673 673
3 " 783
4 757
747

new N of f — 2nd — 1197 1193
1183
1147
1223

old N new f — 2nd — 671 647
777
747
744

126 – old N of f — 2nd — 833
810
790
787

new N of f — 2nd — 1173
1167
1170
1217

Old N new f — 2nd — 820
800
770
764

255-6938

268-7329

255-7329

249-7482

249-7482

127- Old N of - 2nd

757
757
717
707

New N old - 2nd

1117
1100
1190
1133

old N new f 2nd

760
740
717
710

128- old N new f 1st

777 797
800 810
773 790
770 790

2 1

New N old f

1060 1050
1213 1177
1247 1240

old N new f

Made 500 gms old Tube Mix in
15% glycerin 3% Kerr or Mason -
got very green - washed
flake away - washed
green weed - dried & put
about oz in different
acids 3% Dil, only put
Enough acid in to cover &
Cover 1/8 to 1/4" deep -
left all night -
In morning only one
that showed abnormal

Was acetic + Phosphoric
Phosphoric + Oxalic
Oxalic + Boric
Boric + Chromic
Chromic + Citric
Citric + Tartaric
Tartaric + Acetic

Was acetic — Citric Tartaric Acetic
Phosphoric are green Oxalic Boric Chromic
~~green~~ + on blackening + cools
~~green, but~~ acetic black
from black colour till
precipn — Liquid filtered
a green & black colour
left on paper — filtered
clear — all the
others filtered fast +
normal —

Soak out acids from green

Test like Example from Phosphoric
acetic and Citric gives large
white precip with Nitrate
acetic also some —

Ni green from 5.6 left in
glycerin 3% acetic —

Then to the green
Treated about 1/2 gram to the oz with
3% Phosphoric
" Acetic
" Boric
" Tartaric
" Citric
" phenol
Oxalic

Put in the 3% sol on Ni just enough
To Cover it for 1/8 hours in 3" beakers
Drank, left it all night & boiled
off — phenol no pp both chromium
or KOH, none with Tartaric
Boric oxalate — phosphoric
was green — Acetate left
Oxalate white — Acetic
phenol green very white
precip very little also it
Colloided acetic through the
See 2 pages ahead

Lowes off. use 100 grams
of Fe from old packets,-
Break up to 1/4 inch to 1/8
& soak in acc Manufacturers
your packet 24 in. soak
48 hours wash free dry
in acc & put in Corked Bottle

8387 292
8314 283 Dumps 29-av dumps

Run	40 Hot runs		Hot runs
63	1173	867	710
64	1153	1097	710
65	1143	runs	
116	1153	883	727
117	1200	977	
118	1210	1033	707
169	1143	947	
170	1150	973	

100 Hot runs

171	1153	987

8129 276
4007 269
40 Hot Hot

63	1200	1123	733
64	1117	1110	747
65	1106	1107	
116	1127	1127	757
118	1190	1160	783
169	1143	1160	
170	1160	1163	

100 Hot

171	1150	1170

29.4 av dumps

7990 263
7778 254
40 Hot

Run			
63	1150	1100	783
64	1127	1140	823
65	1130	1087	
116	1203	883	803
117	1163	1117	
118	1160	1160	
169	1180	1090	1190
170	1177	1130	

100 Hot

171	1198	1173

30.3 av dumps

E
142 - green Incafe of Carbolic acid

Old ni New f-
10 Hot runs

1253-1190 Hot 890.
1223 1117
1213 1080

1st	597	543	570	348
2	943	893	918	
3	1087	1047	1067	149
4	1147	1110	1126	61
5	1143	1107		
6	1160	1140		
7	1150	1127		
8	1177	1157		
9	1157	1143		

E
143 " Boric, acid

Old ni new f- 10 Hot runs 747 757

1227-1233. Hot 757 757
1173 1183
1160 1163

1st	517	550	583	333
2nd	843	890	866	
3	997	1017	1007	141
4	1063	1070	1068	59
5	1060	1057		
6	1090	1080		
7	1077	1060		
8	1113	1090		
9	1093	1077		

E
144 " Oxalic

Old ni new f- 10 Hot

1247-1200 Hot 710-720
1157 1127
1130 1107

1st	450	410	446	382
2	817	840	828	
3	993	953	988	160
4	1040	1090	1065	73
5	1033	1010		
6	1027	1017		
7	1030	997		
8	1065	1027		
9	1047	1010		

8548 — 302

8605 — 297

25.6 Temp

40 Hat | Hat

63	1117	1110	757
64	1117	1120	813
65	1107	1103	
116	1093	1147	773
117	1177	1210	
118	1067	1213	783
169	1148	1153	260
170	1170	1180	

100 Hat

171	1190	1200

29.8 Temp

40 Hat | Hat

63	1133	1117	883
64	1130	1117	893
65	1127	1097	
116	1200	1200	853
117	1240	1240	
118	1217	1217	852
169	1223	1130	271
170	1247	1223	

100 Hat

171	1267	1247

29.[illegible] Temp

4507 — 265

40 Hat | Hat

63	1190	1000	900
64	1187	1133	850
65	1198	1147	
116	1000	1000	800
117	1267	1143	
118	1310	1193	
169	1267	1140	750
170	1289	1130	

100 Hat

171	1310	1157

Gone on 10 Runs Hat —

E

145 — green breasted Tartaric —

Old Mr Newf — 10 Hat

1243–1267 — Hat 653–660

1160 1230

1157 1200

1st	453	507	480	327
2	787	824	807	
3	967	1007	987	180
4	1067	1090	1076	91
5	1097	1100		
6	1117	1127		
7	1097	1120		
8	1143	1150		
9	1117	1133		

E

146 — " — Citric

Old Mr Newf — 10 Hat runs

1210–1243 Hat 657–647

1123 1153

1093 1127

1st	493	488	455	377
2	873	857	865	
3	1013	1020	1016	151
4	1050	1030	1040	24
5	1033	1017		
6	1033	1023		
7	1033	1040		
8	1060	1040		
9	1053	1033		

E

147 — " — Acetic

Old Mr Newf — 10 Hat

1260–1200 Hat 600–607

1187 1133

1173 1127

1st	590	583	586	327
2	923	903	913	
3	1050	1020	1035	122
4	1093	1067	1080	45
5	1073	1050		
6	1097	1063		
7	1057	1057		
8	1110	1096		
9	1100	1070		

gone on Hat Heat

7590	247	31.2 pendmap
7624	240	

E

148 green treaded Phosphoric

Old Manuf-

1st	10.	13.	S S
2	7	10	8 8
3	7	7	
4	7	10-	
5th	7	7	
6	7	10	
7	7	7	

Co—

all Exp's

120 Mesh 5 grms - 4 2

	14549	14550	1E	2E	3E	4E
8	1200 1800	955 1290	1180 1890	1160 1810	935 1360	1160 1795
16	1225 1845	960 1315	1220 1940	1195 1940	950 1420	1175 1795
24	1180 1805	900 1250	1200 1910	1180 1855	960 1350	1135 1785
32	1150 1775	900 1280	1215 1910	1145 2370	920 1365	1080 1615
40	1135 1740	835 1185	1170 1835	1080 1650	840 1215	965 1460
48	1200 1840	875 1230	1155 1805	1070 1630	840 1260	945 1415
56	1090 1650	825 1190	1185 1875	1055 1715	900 1310	980 1500
64	1160 1750	835 1130	1190 1900	1010 1540	875 1240	885 1355
72	1180 1755	775 1165	1135 1755	1000 1495	825 1180	825 1250

Grom packets from 4 yr old Colls washed & processed through 120 mesh & sent to Dr Cook Lab to put in 5 gram packets.

Thanksgiving mixed 80% of very fine 180 mesh new Ye with old to prevent dirt from a missing packets

Old 72 Continued S Lake 1825

SL 1824 7 gram Pkts 10 gram pockets

	5E	6E	7E	8E
8	645-690	1510 2410	2007 3313	1953 3206
16	1555 2484-	1685 2830	2013 3186	1960 3066
24	1570 2495	1690 2830	2067 3347	1973 3173
32	1600 2500	1725 2860	2000 3200	1940 3093
40	1585 2475	1750 2950	1933 3160	1913 3047
48	1590 2472-	1795 2980	1947 3267	1907 3093
56	1640 2570	1830 2940	1680 2720	1513 2400
64	1660 2525-	1850 3004-	1600 2592-	1393 2267
72	1455 2230	1745 2750		

Evidently the iron comes out of pockets — exc 8E 48 56 + 64 Runs

Possibly produced by following ACIDS on plate

Amidobenzoic Mela-Ortho Para
Amidosalicylic
Phenacylsulphonic DNA — X
Anisic
Anisylsulphonic
Bromic X
Chloric X
Butyric X
Caproic
Monochloroacetic X
Chrysarammic
Cinnamic
Cresolic Para Ortho Meta
Cyanacetic
Cyanuric
Dithionic
Phthalic X
Maleic
Malic
Malonic
Naphtylamine sulphonic

Acids Continued

Perchloric
Phenylacetic
Phosphotungstic
Sulphosalicylic
Sulphurous
Diazobenzenesulphonic
Diazosalicylic
Dithiosalicylic
Ethylenesulphonic
Ethylsulphuric
Fumaric
Gallic
Glutaric
Glycuronic
Glycolic
Heptylic
Hydrobromic
Hydrofluoric
Hydrosulphocyanic
HCy

X X X X X X X

From Expts 142 To 148 – 148
shows that old ppt soon evaporated
to dry & ~~gritten~~ To phosphates
Aluminate, Oxalate (some
or Ferrates,

There is very little Iron in
ppt so Ferrate is impossible
Aluminate + phosphate
is probably the trouble,
with Ferrate Oxalate
or a Silicate,

The thing ~~that~~ that was in view
of 148 is To investigate subject
of phosphoric acid determination
has taken place

I notice lot of Irons from old packets put in various cards Some are trade, others just as strong as Test -

The - Most White process yarns Old type Nakol to Token next by [illegible] Corbin & Na formula

But the test in Gallery shows 925 NAH for cocoa & 910 NAH for phosphate — formula may be taken from cocoa Try it —

Phosphoric, to a big Phosphorescence — pleasant Nakol Makes Mich/Oil/2 most

Why ? ?

All Irons —

All on 230 Run Ordinary
Monday washed, washed 4
times, Total time 98 hours
before put out to dry —

All the old Irons
Couldnt load 5 grams
used 7 grams in
pocket —

10% Head of 12 mixed
used with all
149 to 172
All pockets checked
by tech maintain

Old Fe 4 yr.

149 E 4 yr cell Iron — 5 gram pocket, iron
3% Tartaric — No 149 E ground thru 60 mesh
Miller adds 10% new iron thru 80 mesh

Run			
1	1570	1700	
2	1640	1775	
3	1600	1880	
4	1412	1437	750
5	1337	1375	
6	1187	1150	
7	1688	1735	
8	1645	1810	
9	1850	1890	
10	1575	1610	
11	1575	1600	
12	1515	1600	
13	1540	1625	
14	[illegible]	1525	
15	1410	1480	
16	1400	1500	
17	1585	1670	
18	1500	1545	
20	1600	1670	Co
21	1600	1690	

150 E 3% Boric Acid —

	No 1	No 2	
1	1570	1500	
2	1600	1540	
3	1600	1497	
4	1187	1125	750
5	1212	1144	
6	1112	1100	
7	1600	1600	
8	1685	1700	
9	1710	1750	
10	1575	1610	
11	1520	1525	
12	1490	1490	
13	1515	1515	
14	1450	1440	
15	1410	1390	
16	1420	1400	
17	1610	1620	
18	1500	1500	Co
20	1600	1500	Cool day
21	1635	1645	

Old Fe 4 7⁵

151 E 3% Oxalic Acid

1	1640	1700		11	1435	1475	
2	1640	1700		12	1425	1470	
3	1588	1665		13	1440	1520	
4	1100	1400		14	1350	1445	
5	1394	1400	750	15	1310	1315	
6	1100	1200		16	1300	1400	Co
7	1575	1680		17	1460	1580	
8	1640	1750		18	1330	1425	
9	1710	1770	Not much	20	1470	1565	
10	1475	1545	coarser	21	1475	1560	

152 E 3% Phosphoric Acid

1	1880	200		11	1590	1530	
2	1860	1670		12	1575	1470	
3	1900	1730		13	1600	1500	
4	1412	1250	750	14	1495	1435	
5	1400	1450		15	1440	1395	
6	1225	1175		16	1460	1400	Co
7	1775	1685		17	1630	1555	
8	1800	1700		18	1500	1470	
9	1895	1825	Red much	20	1630	1560	
10	1635	1545	coarser	21	1650	1565	

Evidently phosphoric acid dont limit Iron like it limits Nickel

Old #2 4yrs

153 E 3% Acetic

1	1570	1765		11	1670	1580
2	2000	1755		12	1685	1520
3	2080	1735		13	1615	1550
4	1437	1375	950	14	1590	1490
5	1225	1425		15	1535	1450
6	1275	1187		16	1580	1475
7	2050	1710		17	1765	1645 — buttery
8	1970	1750	Hard watery	18	1650	1525
9	1945	1850		20	1780	1665
10	1680	1575		21	1770	1650
				22	1680	1585
				24	1640	1550
				25	1610	1510
				26	1700	1585
				27	1640	1525
				28	1575	1485

154 E 3% Hydrofluoric acid

1	1450	1250		11	1600	1525
2	1850	1700		12	1575	1490
3	1860	1700		13	1625	1520
4	1437	1287	950	14	1500	1445
5	1450	1212		15	1470	1425
6	1200	1050		16	1480	1430
7	1770	1635		17	1645	1580
8	1810	1690	Hard watery	18	1540	1475
9	1895	1715		20	1630	1600
10	1630	1535		21	1650	1590
						19

G

156

49	1700	1660

156 F A = 2nd Run —

1		
2	1790	1680
3	1780	1665
4	1700	1645
5	1650	1690
6	1660	1625

This is 156. about 7 grams but no
Effect 10% reg[illegible] on it

7	1745	1675
11	1760	1750
12	1710	1700
15	1635	1645
16	1720	1700
17	1665	1650

Old Fe 4 yrs

155 B Hydrofluorosilicic Acid

1	1385	1690			11	1580	1515
2	1700	1650			12	1560	1435
3	525	1600			13	1590	1420
4	437	1287			14	1460	1350
5	475	1225	950		15	1425	1305
6	612	1025			16	1400	1280
7	1710	1635			17	1560	1400
8	1760	1650			18	1425	1300
9	1850	1825	Heat corrected		20	1570	1400
10	1600	1575	Cooler		21	1565	1400

C

156 E Sulphurous Acid

1	1865	1860			11	1900	1900
2	1950	1860			12	1835	1860
3	1900	1800			13	1850	1855
4	1425	Stick			14	1815	1830
5	5	1500	950		15	1785	1820
6	1425	1500			16	1790	1825
7	1965	1970			17	1860	1910
8	1980	1980			18	1845	1900
9	2125	2100	Heat corrected		20	1900	1930 Saturday
10	1890	1890	Cooler		21	1900	1930
					22	1865	1873
					24	1800	1860
					25	1790	1830
					26	1850	1895
					27	1835	1855
					28	1790	1835

Old Fx 4 yrs

157 E Arsenic Acid 3%

1	1900	1925	
2	1870	1870	
3	1800	1855	
4	1450	1437	750
5	1475	1462	
6	1237	1237	
7	1800	1800	
8	1810	1810	
9	1955	1960	Hot [illegible]
10	1635	1640	[illegible]

11	1625	1630
12	1575	1570
13	1600	1600
14	1490	1500
15	1440	1480
16	1450	1480
17	1590	1585
18	1500	1500
20	1625	1600
21	1595	1595
22	1540	1530
24	1510	1505
25	1500	1500

158 E Phosphotungstic Acid 3%

1	1865	1875	
2	1785	1885	
3	1700	1955	
4	1450	1437	
5	1462	1212	750
6	1187	1250	
7	1765	2045	
8	1900	1930	
9	1850	1895	Hot [illegible]
10	1615	1640	[illegible]

11	1590	[illegible]
12	1580	1580
13	1625	1625
14	1500	[illegible]
15	1450	1440
16	1490	1460
17	1670	1635
18	[illegible]	[illegible]
20	1665	1670
21	1690	1654
22	1553	1535
24	1515	1500
25	1510	1460

Old Fe 4 yrs

159 E Phosphomolybdic Acid 3%

1	1965	1775		11	1700	1470
2	1885	1685		12	1685	1435
3	1900	300		13	1700	1460
4	1425	187		14	1615	1400
5	1425	625	450	15	1575	1345
6	1275	750		16	1575	1325
7	1865	1565		17	1740	1520
8	1940	1670		18	1690	1390
9	1970	1650	Leaf corrected	20	1770	1575
10	1700	1470	Cacao	21	1775	1560
				22	1685	1425
				24	1610	1355
				25	1585	1335
				26	1655	1440
				27	1600	1373
				29	1525	1300

160 E Trichloroacetic Acid 3%

1	1870	1875		11	1580	1540
2	1770	1900		12	1540	1575
3	1700	1970		13	1550	1600
4	1425	1362		14	1460	1470
5	1312	1237	450	15	1394	1425
6	1212	1312		16	1400	1400
7	1720	2045		17	1600	1595
8	1800	1970		18	1500	1485
9	1895	1890	Leaf corrected	20	1630	1575
10	1600	1645	Cacao	21	1600	1595
				22		

Co

Old to 4 yrs

161 E Formic Acid 3%

1	1790	1575		11	1595	1425
2	1700	1565		12	1580	1400
3	80	1500		13	1615	1415
4	1225	1437		14	1490	1350
5	1225	587	750	15	1445	1310
6	1250	917		16	1460	1340
7	2000	1460		17	1630	1465
8	1910	1580		18	1500	1325
9	1815	1575	Heat cooled	20	1670	1470
10	1615	1430	Cooler	21	1565	1480

162 E Salicylic Acid 1/4 %

1	1985	1995		11	1700	1710
2	1900	1950		12	1685	1700
3	1895	1900		13	1700	1740
4	1500	1450		14	1585	1620
5	1462	1450	750	15	1550	1590
6	1250	1175		16	1575	1620
7	1875	1800		17	1735	1700
8	1900	1810		18	1700	1700
9	1995	1955	Heat cooled	20	1750	1800
10	1700	1710	Cooler	21	1760	1780
				22	1675	1710
				24	1615	1660
				25	1600	1645
				26	1700	1735
				27	1630	1670
				28	1575	1600

Old Te 4 yrs

163 E Benzoic Acid 1/4%

1	1675	1800			11	1450	1540
2	1650	1750			12	1440	1550
3	1600	1700			13	1460	1525
4	1250	1375			14	1440	1465
5	1212	1412	450		15	1385	1425
6	1137	1187			16	1370	1435 Co
7	1640	1685			17	1540	1585
8	1675	1730			18	1420	1540
9	1715	1820	Heat treated		20	1555	1600
10	1485	1590	Cooler		21	1555	1600

164 E Para Cresylic 2%

1	1800	250	SCKF		11	1550	1600
2	1700	250			12	1550	1580
3	1630	1800			13	1620	1620
4	1425	1225			14	1490	1525
5	1425	862	752		15	1460	1460
6	1225	1262			16	1470	1460 Co
7	1725	1900			17	1635	1625
8	1770	1920			18	1540	1500
9	1860	1860	Heat treated		20	1675	1655
10	1580	1640	Cooler		21	1645	1650

Old 72. 445

165 E Meta Cresylic Acid 2%

1	1970	1900		11	1700	1675
2	1900	1800		12	1655	1645
3	1900	1795		13	1700	1700
4	1400	1487		14	1595	1595
5	1450	1462	750	15	1565	1565
6	1225	1250		16	1590	1585
7	1875	1875		17	1765	1750
8	1920	1870		18	1690	1850
9	1990	1975	Hal coefficient	20	1780	1875
10	1710	1675	Curve	21	1785	1845
				22	1695	1710
				24	1625	1625
				25	1610	1610
				26	1705	1705
				27	1635	1635

166 E Ortho Cresylic Acid 2%

1	1900	1590		11	1675	1710
2	1870	1600		12	1620	1475
3	1860	1600		13	1660	1465
4	1500	1312		14	1555	1411
5	1475	1250	753	15	1530	1400
6	1250	1212		16	1520	1415
7	1850	1600		17	1700	1560
8	1860	1675		18	1560	1490
9	1960	1760	Hal coefficient	20	1740	1605
10	1670	1500	Curve	21	1700	1600
				22	1635	1525
				24	1595	1500
				25	1555	1500
				26	1645	1585
				27	1590	1490

Oldfe 4 4th

167 E Picric Acid 3%

1	1800	1890	
2	1760	1880	
3	1700	1880	
4	1362	1427	
5	1250	1437	750
6	1225	1275	
7	1725	1865	
8	1760	1900	
9	1865	1975	Hal ice-cl Cooler
10	1580	1705	
11	1600	1700	
12	1550	1650	
13	1530	1700	
14	1470	1600	
15	1400	1550	
16	1400	1590	
17	1565	1750	
18	1495	1650	
20	1635	1755	
21	1655	1755	Co

168E Hydrochloric Acid - 2%

1	1725	1800	
2	1795	1750	
3	1875	1765	
4	1425	1375	
5	1150	1487	750
6	1200	1250	
7	1980	1730	
8	1960	1815	
9	1860	1900	Hal ice-cl Cooler
10	1635	1615	
11	1685	1630	
12	1625	1585	
13	1570	1550	
14	1585	1590	
15	1535	1515	
16	1540	1535	
17	1760	1740	
19	1695	1680	
20	1755	1745	
21	1800	1765	
22	1685	1675	
24	1600	1620	
25	1550	1585	
26	1650	1680	
27	1530	1600	

Cyclohexane

Dioxy 300 ml a

ACC brown

lemon

Old 72 4 yrs

169 F Chromic Acid 3%

1	910	900	
2	935	1025	
3	650	970	
4	225	525	450
5	550	575	
6	562	662	
7	950	1125	
8	880	940	
9	910	1020	
10	885	995	
11	870	930	
12	875	920	
13	860	890	
14	850	840	
15	810	830	Co
16	850	900	
17	940	875	
19	850	900	
20	835	895	

170 F Carbolic acid 3%

1	1730	1690	
2	1800	1765	
3	1690	1690	
4	1150	1057	
5	1212	1150	750
6	1212	1225	
7	1890	1890	
8	1635	1650	
9	1675	1700	Co Co
10	1590	1600	
11	1495	1575	
12	1550	1600	
13	1480	1480	
14	1455	1465	
15	1440	1500	Co
16	1570	1600	
17	1490	1540	
19	1600	1640	
20	1600	1655	

Old Fe 44

171 Citric Acid 3%

1	1700	1700	
2	1830	1820	
3	1700	1700	
4	1125	1175	
5	1212	1275	750
6	1262	1312	
7	1965	1945	
8	1725	1760	
9	1670	1720	
10	1600	1650	
11	1585	1625	
12	1610	1630	
13	1475	1525	
14	1435	1535	
15	1425	1500	
16	1640	1700	
17	1520	1580	Co
19	1645	1700	
20	1660	1745	

172 Nitric Acid 2%

1	1700	1635	
2	1725	1600	
3	1590	1500	
4	1087	1062	
5	1075	1050	750
6	1125	1100	
7	1850	1735	
8	1585	1460	
9	1630	1570	
10	1495	1430	
11	1480	1400	
12	1465	1400	
13	1360	1355	
14	1325	1335	
15	1300	1315	
16	1420	1430	
17	1325	1400	Co
19	1400	1470	
20	1450	1475	

Dried 173 to 177 all night
on temp + 5 min on hot
plate in Incubator

Actic was only one
that gave off steam —
seemed to hold water +
dry slow —

Old Ni 4 yrs

173 E Saturated Phenol in Water

1st	617	633
2	984	1000
3	1047	1047
4	1043	1047
5	1020	1017
6	1027	1037
7	1033	1047
8	1037	1043

4 hr 24 min 7547 } 2nd
7510 } 24 hr

19	963	937
20	940	890
21	900	820
23	877	833

Co

10 Hot

230 - 231

9 now soak them in Conc CoCl after rinsing from Dwells. See book 2

174 E Formic Acid 0/0

1	1100	1107
2	1153	1157
3	1113	1117
4	1100	1100
5	1070	1073
6	1090	1090
7	1100	1100
8	1103	1103

7547 280
7547 279
Water

19	997	1003
20	967	983
21	930	940
23	900	917

10 Hot

232-233

9 now soak in Conc CoCl after rinsing from Dwells See book 2

Much colloid, filtering very slow on account of colloid running thru filter — Acetic alone has this feature, phenol a little. Phenol in alcohol more than phenol in water — all these are test must be some significance in it, =

Washed with Distd Alcohol all comes thru no color —

Old Ni 4 yr cell

175 Acetic Acid 6%

1	1123	1117
2	1170	1150
3	1130	1097
4	1127	1090
5	1083	1050
6	1107	1063
7	1117	1067
8	1117	1067

Hot 10

7 777 266
7 854 259

19	940	977	C
20	950	957	
21	913	917	
23	883	887	

176 Phenol in Alcohol 12%

1	847	860
2	1035	1047
3	1070	1010
4	1067	1000
5	1040	973
6	1050	993
7	1060	1000
8	1053	1003

7 277 259
7 297 259

19	890	913	C
20	883	893	
21	860	857	
23	830	833	

10 hot 236-237

Now soak in Conc Coefficient reaction from Smith. see book 2

This is even more colloid than Citric or Glucose —
If Colloids Coming from the Li and running thro filter when Work Citrate is Fuming Heated then pyrophosphate of Soda will be good.

Potassium Citrate —
Washwaters quite Colloid —

177. Saturated Soda Pyrophosphate.

1	1097	1077		7 530	262	
2	1130	1110		7 528	256	
3	1090	1067				
4	1080	1067	19	950	943	
5	1047	1013	20	930	918	
6	1067	1043	21	893	877	
7	1077	1057	23	877	853	
8	1083	1057				

18 Oct

C

Iron –

178 – Miller Mixed Cattle Feed
Iron Mix 10% of seed mix
Have 150 @ 150 week to keep
vicia from competing to amount
needed by reduction of the Hay.

Filtrate, Light green.

filtrate not green
(rinsed w cash water a little Cotton)

Ni

179E Tartaric Acid 3%

1st	0	0			7 170	251
2	1020	1030			7 170	242
3	1033	1043				
4	950	983				
5	1110	1113	19	893	910	
6	1117	1017	20	857	893	
7	1013	1013	21	827	903	C
			22	800	837	

10 Hot

180E Phosphoric Acid 3%

1	227	627			6,985	238
2	150	100			7009	232
3	53	10				
4	23	7				
5	13	7	18	200	28	
6	10	-3	19	390	3	
7	10	3	20	303	0	C
			22	190	0	

10 Hot

after soaking Sept Sunday — Cooch water turned very Colloid — Thos seed seemed to require time to give colloidal water — Most colloidal yet — Thos Thorns not good if wanted more time, 2 or 3 days in acid or 4 or 5 days soak —

faint colloid in funnel cooch water —

181 E Hydrofluoric Acid 3%

1st	260	567		7549	270
2	939	1117		7510	262
3	1120	1117			
4	1097	1067			
5	1117	1087	18	970	960
6	1127	1087	19	967	957
7	1113	1067	20	937	917
			22	927	897

10 Hot-

Co

182 E Hydrofluorosilicic Acid -

1st	977	850		7250	253
2	967	1190		7283	248
3	960	953			
4	917	927	18	923	600
5	957	968	19	910	957
6	977	967	20	870	886
7	980	977	22	847	853

10 Hot

Very light green

Not green. – after overnight at room temp. Coffee colour like final yellowing – even stronger than Phosphate tungstic –

1

183 E Sulphurous Acid 3%

1st	1173	1133			7 618	273
2	1183	1000			7 574	264
3	1167	1120				
4	1100	1057	18	973	997	
5	1147	1103	19	1010	977	
6	1143	1107	20	[illegible]	[illegible]	
7	1130	1090	22	893	903	

18 Hot

Hot day

184 E Arsenic Acid 3%

1st	967	950			7 262	255
2	977	997			7 17[illegible]	244 -
3	1000	980				
4	950	917	18	947	883	
5	1010	997	19	917	873	
6	1020	987	20	[illegible]	[illegible]	
7	1023	983	22	893	820	

10 Hot

Called Comes Three —
Hard to Light — after wash Clear
Little Color

Very faint trace green

185E Phosphotungstic Acid 3%

1st	1033	997			7319	258
2	1083	1000			7240	249
3	1047	980				
4	990	920				
5	1033	993	18	920	867	
6	1053	987	19	910	897	
7	1060	983	20	887	853	
			22	873	830	

10 Hot

C

186E Phosphomolybdic acid 3%

1st	1057	1023			7222	264
2	1027	620			7236	253
3	1033	1037				
4	953	947	18	877	897	
5	1017	950	19	860	883	
6	1023	990	20	823	873	
7	1020	987	22	900	817	

10 Hot

C

White fullmate

187 E Trichloroacetic acid 3%

7 273 257
7 251 252

1st	1147	1157	18	963	973	
2	1177	1150	19	927	940	
3	1133	1097	20	873	910	
4	1067	1050	22	477	983	
5	1123	1077				
6	1117	1083				
7	1093	1077				

10 Hot

Cp

White fullmate —

188 E Salicylic acid 1/4%

7.206 261
7 209 252

1st	1107	1150	18	970	1040	
2	1147	1150	19	940	1017	
3	1110	1117	20	903	977	
4	1043	1060	22	873	950	
5	1080	1083				
6	1083	1090				
7	1077	1080				

10 Hot

C

White -

White

189 E Benzoic Acid 1/4"

1st	1160	1143		7410	259
2	1100	1110		7390	259
3	1123	1113			
4	1063	1053			
5	1100	1087	18	1030	993
6	1107	1087	19	1000	963
7	1074	1080	20	950	917
			22	937	893

10 tot

Co

190 E Boric Benzoic acid 2%

1st	183	750		7262	254
2	177	1050		7253	242
3	1047	1017			
4	990	950	18	970	960
5	1027	977	19	907	910
6	1027	983	20	827	850
7	1090	1067	22	853	857

10 tot

Co

No green.

1904 all before sent to SB. & Co May 18 1914.

1915 Picric acid ~~2%~~ 1%

					7.230	263
					7.235	259
1st	727	1123				
2	1083	1150				
3	1157	1057				
4	1067	1033	18	1020	1003	
5	1107	1067	19	960	967	
6	1110	1067	20	901	917	
7	1087	1067	22	913	933	
	10 Heat					

1922 Reg new green in 3% Phosphomolybdic Acid

					7276	242
					7290	254
1st	950	967	After Heat			
2	1143	1123				
3	1173	1143	24	1247	1240	
4	1223	1190	25	1167	1200	
5	1223	1247	26	800	1173	
6	1227	1263				
7	1277	1317		40 Heat		
8	1277	1273				
9	1293	1280	67 R	1220	1233	
10	1329	1283	68	—	1133	
11	1330	1190	69	1357	1163	
12	1333	1267	120	1197	1050	
13	1313	1240	121	1307	1060	
			122	1307	1103	

Schedule run on
Req Varied plates to
get rid of [illegible] section to
Condense Hold Enough to
Stop Birds —

Started 120 — 1 hour to reach 130?
One hour more to reach 140
Held at 140 for 3 hours —
Took one hour to reach 225
Held one hour at 225 —
Took them out at 225 right — like
air — 1 Rack no plates in

Plates placed correctly on
bunker —

Transfer

OK 11/11 —

This schedule seems OK no
blisters or any defects —

Took some mix from 4 yr cells reduced by Na Hyposulphite & analysed —

Silica-	0·065 %
Iron oxide	0·29
Alumina	0·11
Lime	0·022
Sulphate as SO_3	0·077
Phosphate	Very small trace
Insoluable in acids	0·017.

This is 6 Mlg Al_2O_3 per Long Ton

— A4 —

193

121	1177	1150
122	1167	1140

194

121	1160	1153
122	1217	1147

193E

1st	1027	1037
2	1166	1167
3	1123	1123
4	1150	1157
5	1163	1157
6	1157	1150
7	1187	1173
8	1174	1167
9	1190	1180
10	1200	1190
11	1200	1900
12	1190	1193
13	1170	1163

New green formic Acid 6%

7366 274 D

after Hat of 331 265 D

24	1283	1277
25	1183	1220
26	1177	1177
–	40 Hat	
67	1280	1197
68	1163	1127
69	1117	1140
120	1243	1200

New green [illegible]

collect [illegible]

solution [illegible]

194E

7400 260 D

245

after Hat of 380

1st	1150	1100
2	1223	1210
3	1177	1160
4	1217	1187
5	1227	1210
6	1207	1193
7	1227	1210
8	1223	1210
9	1280	1267
10	1297	1263
11	1323	1290
12	1320	1297
13	1317	1277

24	1327	1333
25	1247	1263
26	1203	1246
after 40 Hat		
67	1327	1290
68	1210	1190
69	1220	1200
120	1240	1197
121	[illegible]	[illegible]
122	[illegible]	[illegible]

NOTE

As Heard Combined with the $M(OH)_4$ a weaker acid would it act to probable when put in acid, it. when reacted or changed to it could not Rule —

Should use Both of Co. the treatment or co mouth feet & dry

New green

195 E					
			Phosphoric Acid 3%		
1st	83	33		7082	254
2	18	17		7087	244
3	0	0			
4	0	0			
5	0	0			
6	0	0			
7	3	3			
8	3	3	CO		
9	0	0	CO		

old M

196 E					
			Potassium Lactophosphate		
1	3	3		7066	233
2	3	3		61942	200
3	3	3			
4	3	10			
5	0	10			
6	0	10	CO		
7	0	0	CO		

197 E Potassium Nitrite

1	1113	1118		7292		241
2	1107	1100	After Hot	7262		240
3	1087	1067	22	983	980	
4	1057	1053	23	900	893	
5	1047	1030	24	823	833	
6	1017	1000				
7	1033	1013				
8	1038	1003				
9	1037	1020				
10	1020	1000				
11	997	977				

198 E Potassium Sulphocyanate

1	1077	1117		7248		252
2	1066	1100	After Hot	7238		250
3	1047	1087	22	933	967	
4	1027	1063	23	853	873	
5	1010	1047	24	800	797	
6	993	1020				
7	997	1033				
8	993	1033				
9	993	1037				
10	990	1027				
11	957	997				

199 E Potassium Sulphate

1	1117	887		7245		256
2	1110	1073	Mean of	7228		2.51
3	1090	1047	22	957	990	
4	1067	1000	23	867	907	
5	1053	1010	24	797	797	
6	1033	907				
7	1043	997				
8	1043	993				
9	1050	993				
10	1043	990				
11	1013	953				

200 E Potassium Chloride -

1	917	1087		7215		249
2	1107	1067	Mean	7187		2.58
3	1083	1043	22	977	933	
4	1060	1057	23	890	880	
5	1047	1037	24	807	817	
6	1017	1000				
7	1033	1013				
8	1023	1000				
9	1033	1010				
10	1027	997				
11	993	957				

202 fillers very slowly—

201 E Potassium Bromide

1	1103	1123				7.298	263
2	1110	1110	after heat			7.311	256
3	1080	1083	22	933		933	
			23	860		860	
4	1053	1057	24	810		813	
5	1043	1040					
6	1020	1017					
7	1037	1038					
8	1030	1020					
9	1040	1030					
10	1027	1023					
11	993	997					

202 E Potassium Ferrocyanide

1	1083	1053				7.275	200
2	1073	1050	after heat			7.160	252
3	1060	1027	22	913		977	
			23	917		893	
4	1027	1000	24	867		933	
5	1036	950					
6	1000	957					
7	1021	967					
8	1013	967					
9	1017	990					
10	1010	933					
11	943	913					

Rapid action - much gas, had to pour off Excess -

203

120	643	687
121	627	673

204

120	720	713
121	700	733

203 E Potassium Bisulphate

1	1100	1127		7305		268
2	1093	1120	after Heat	7282		263
3	1070	1087	22	917	933	Nats
4	1043	1073	24	827	870	
5	1000	1037	25	850	880	
6	1020	1050	after	40 Heat	—	
7	1013	1047	66	873	873	
8	1023	1050	67	717	777	
9	1000	1040	68	733	790	
10	987	Load	119	700	743	
11	1050	1073				
12	1050	1077				

204 E Potassium Carbolate

				7298		261
1	1130	1133	after 18 Heat	7812		256
2	1113	1117	23	927	963	
3	1080	1087	24	887	930	
4	1067	1067	25	880	930	
5	1040	1040		40 Heat		
6	1050	1050	66	877	550	
7	1047	1047	67	800	673	
8	1043	1040	68	800	910	
9	1033	1048	120	753	680	
10	1017	Load				
11	1103	1077				
12	1093	1073				

205 E Potassium Ferricyanide

1	1067	1067		7 190	252
2	1050	1053	10 Hot	7 110	243
3	1000	1020			
4	1000	1000	23	850	893
5	987	990	24	833	897
6	993	987	25	833	897
7	973	967		40 Hot	
8	977	997	66	840	840
9	930	933	67	780	773
10	900	917	68	800	810
11	943	990	120	760	757
12	933	953	121	627	675

106 E Potassium Formate

1	1110	1133		7 188	251
2	1103	1117		7 243	252
3	1063	1053	10 Hot		
4	1050	1060	23	937	943
5	1023	1033	24	887	893
6	1043	1040	25	873	877
7	1033	1033		40 Hot	
8	1043	1040	66	860	880
9	1033	1030	67	757	800
10	1000	997	68	750	807
11	1080	1063	120	774	767
12	1090	1067	121	710	720

Curious

203 To 208 —

Hot Capacity is only
100 less than Cold
Capacity —

Strange —

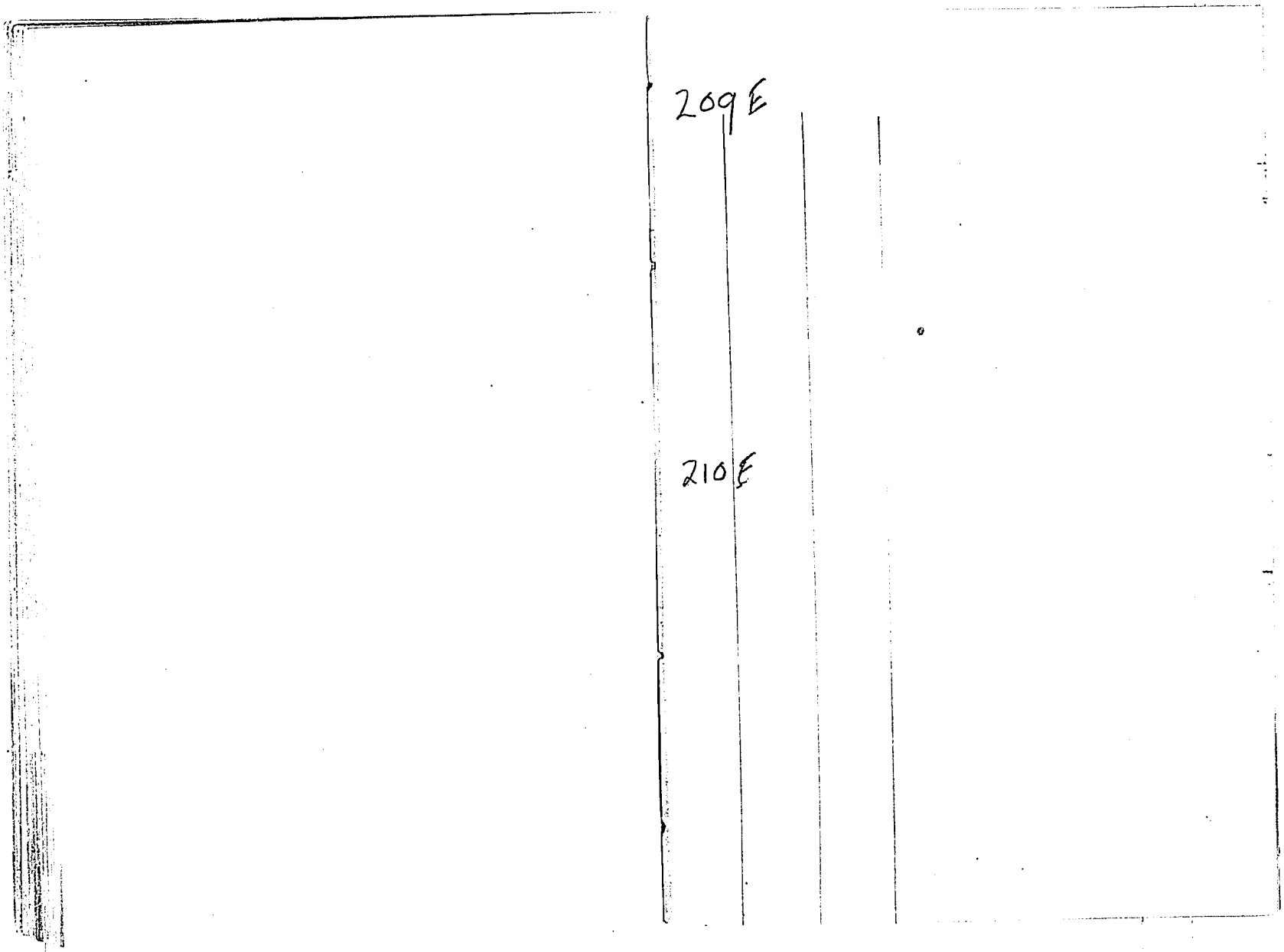
All about same

207 E Potassium Citrate

				7 198		261
1	1113	1123	10 Hot	7 220		253
2	1113	1093				
3	1080	1067	23	960		947
4	1073	1047	24	900		903
5	1043	1013	25	890		950
6	1053	1017		40 Hot		
7	1053	1003	66	913		933
8	1067	993	67	820		833
9	1057	990	68	810		843
10	1023	967	120	787		800
11	1107	1027	121	717		733
12	1100	1047				

208 F Potassium Benzene Sulphonate 466 off

				7 223		260
1	1157	1150	10 Hot	7 315		249
2	1140	1133				
3	1133	1103	23	967		977
4	1090	1077	24	917		923
5	1063	1047	25	900		913
6	1077	1037		40 Hot		
7	1080	1043	66	917		957
8	1087	1047	67	813		857
9	1067	1037	68	810		867
10	1047	1000	120	787		840
11	1127	1000	121	707		777
12	1127	1067				


209E
210E

211 E.

Dup of 1902

1st	680	695 released
2	650	670
3	675	700
4	675	705
5	650	690
6	650	685
7	740	775
10	825	858
11	845	870
12	830	870
13	780	809
14	770	800
16	855	870
17	815	825
18	810	825

1902A

1	1490	1425	14	1600	1550
2	1575	1490	16	1625	1625
3	1550	1485	17	1600	1565
4	1450	1430	18	1585	1535
5	1435	1400			
6	1500	1425			
7	1635	1580			
10	1700	1645			
11	1745	1660			
12	1675	1625			
13	1585	1550			

Silver Lake –

1		Old	7½ reduced on H scale
2	795	805	#1902
3	780	790	
4	795	795	
5	780	825	
6	785	810	
7	755	770	
8	775	780	
9	850	855	
12	890	900	
13	900	910	
14	875	890	
15	840	850	
16	830	845	
18	900	910	
19	855	865	
20	850	840	

#1902A

1					
2	1720	1700	14	1625	1650
3	1700	1650	15	1525	1575
4	1670	1625	16	1520	1600
5	1675	1635	18	1590	1620
6	1600	1600	19	1540	1565
7	1575	1575	20	1500	1535
8	1590	1590			
9	1665	1685			
12	1675	1680			
13	1690	1690			

Much Fe_2O_3 hydrox

Started to run with 1% NaH but elapsed —

all concentrated Sols Regenerated Old Fe —

212 E Potassium Chloride - Saturated

1	1180	1400
3	1300	1485
4	1330	1475
5	1270	1400
7	1155	1345
8	1125	1325
9	1230	1400
10	1140	1375

213 E Old Fe K Al Sulphate K

1	1365	1600
3	1400	1520
4	1420	1075
5	1300	1625
7	1235	1380
8	1235	1345
9	1315	1460
10	1290	1400

214 E old Fe K Chromate.

1	1365	1420
3	1275	1285
4	1335	1355
5	1250	1300
7	1160	1175
8	1125	1135
9	1225	1235
10	1145	1150

Washed 1% KOH.

1%, KOH, washed
has ferric OH,

1% washed KOH

215 F old ½ K' Sulphide (Fuses)

1	1190	1385
3	1400	1535
4	1440	1550
5	1425	1500
7	1400	1435
8	1375	1410
9	1460	1535

216 F old ½ - K Manganate,

1	1025	990
3	855	810
4	835	780
5	785	725
7	680	665
8	625	620
0		

217 F old new K Hypermanganate

1	1480	1525
3	1490	1545
4	1445	1645
5	1400	1525
7	1300	1400
8	1275	1375
9	1375	1455
10	1355	1415

Has Jamice (6)

Little Jamice (4) - Brown

1/0 Red corner -

218E edge K Permanganate,

1	815	825
3	690	660
4	560	600
5	540	550
7	570	555
8	530	545

219E edge - K Bisulphate,

1	1620	1535
3	1750	1675
4	1755	1690
5	1600	1560
7	1585	1525
8	1545	1550
9	1605	1555
10	1575	1550

220E edge K Permanganate

1	1370	1335
3	630	630
4	750	795
5	740	750
7	1055	1080
8	1135	1150
9	1300	1340
10	1240	1290

Added Some Points (4)

221 E coli F_1 K Phosphate.

1	1495	1490
3	1600	1600
4	1600	1600
5	1500	1500
7	1465	1425
8	1435	1400
9	1495	1475
10	1460	1440

222 E coli F_1 – K Iodide.

1	1610	1590
3	1680	1635
4	1660	1600
5	1530	1500
7	1500	1435
8	1500	1430
9	1575	1515
10	1555	1475

223 E coli F_1 K Oxalate.

1	1415	1460
3	1545	1560
4	1545	1600
5	1415	1410
7	1375	1350
8	1395	1420
9	1455	1410

224 E coli F_1 – K Perchlorate

1	1660	1620
3	1640	1600
4	1600	1545
5	1460	1445
7	1580	1415
8	1520	1420
9	1590	1465
10	1535	1470

Some ferric Cl

225 E cal Fe_2 - K Bichromate

1	1200	1255
3	680	685
4	680	684
5	600	610
7	625	625
8	600	600

Co

226 E cal Fe_2 K Nitrite

1	1440	1465
3	1475	1500
4	1455	1500
5	1310	1395
7	1240	1340
8	1200	1330
9	1260	1380
10	1245	1345

227 E cal Fe_2 - K Arsenite

1	1470	1535
3	1560	1600
4	1600	1650
5	1500	1525
7	1525	1515
8	1500	1500
9	1595	1595
10	1550	1560

228 E cal Fe_2 K Carbonate

1	1575	1555
3	1730	1680
4	1735	1660
5	1600	1520
7	1525	1475
8	1520	1445
9	1595	1525
10	1550	1477

229 E the old Iron oxidized any Treatment heat treatment ROH ready cut

1	1595	1675
3	1685	1740
4	1685	1740
5	1580	1645
7	1560	1575
8	1555	1575
9	1600	1630
10	1585	1645

230 E Old iron oxidized any Treatment ROH ready cut

1	1595	1595
3	1690	1700
4	1725	1740
5	1600	1650
7	1500	1590
8	1550	1565
9	1595	1645

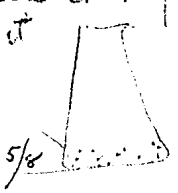
From 212 to 230 sent to Peter Lake to 66 grams Have 50 @ 60 mesh 10% mesh 7E mix added & mixed into 7 grams powder no Hg added except what is in the 10% mesh

10 1500 1585

See next page

231 E Uranous Chloride —
10% reacts a little acid
from hydrolysis —

Just put trace of solution on
Green to saturate it + give 1/32
of solution above it



Put soak 11 am Tuesday

Took out Friday 9 am for drying
at 3 pm in cobalt pie plate put on
hot plate, 1/2" high block —
Took off 1130 pm — Saturday
at 10 20 am put in 10% NaOH.
Started reacting ^ 1 30 pm out black.
Saturday
Tuesday — air dried extremely &
put in bottle.
Chemet testing percent Uranium
in —
Sent to Smith to put up 2 blank
tubes —

Ur Chl in at 11 am Tuesday just wet
only little excess of liquid
Out drying Friday 9 am —
put on hot plate 1/2" block.
off Hot plate 1130 pm —
Drying Monday after Chloride all out,
24.2 green 4 fl — wt 7744 — 236 Pump
7734 230 "

56 grms Uranium Chl to
A4 Cell

8 A4 to 1 lb Ur C ~ 5.16 Dittmer -

63 Cents per A4 —

Chemet Says green contains
4.48% Uranium figured as
Uranium Chloride
2.81% Metallic Uranium

Uranium cc

Short Tubes

• heading of book page after 5 Hot

Run		
1	903	927
2	1043	1050
4	1173	1160
5	1193	1183
6	1190	1167
7	1217	1197
8	1243	1233
9	1247	1230
10	1254	1243
22	1322	1257
23	1317	1270

To 9 ↓

64	1377	1340	
65	1327	1267	
66	1293	1233	Hot.
119	1310	1260	Hot tap 577-[illegible]
120	1273	1200	
121	1300	1257	

1333-1287 To ½ V-

This would requires about 100 grms Black Oxide Cobalt per A4 cell at 1cc 23 Cents for Cobalt,

240 E

40% Concentrated Cobalt Chloride test on $Ni(OH)_2$

1220 Vacuum dried in 6 gallon jar – no Excess 817 cc of solution

Runs cc
NO 2 book

The $Ni(OH)_2$ for the 2 A4 Cells – contain 5.82% Metallic Cobalt or 9.17% of Cobalt Hydrate dry

Each A4 cell is dry 8 tubes there was not enough hydroxide

Weigh all washed dry No Excess liquid –

200 grms old 7₂ in 3% Sulphurous acid, Twice bulk of liquid to bulk of 7₂

200 grms 175cc Sulphurous acid

Soaked 12 hours = washed 3 or 4 times 24 hours dried — very black when started to dry — when dry quite red

Oh and I have been dried in Vacuum or H_2O washed out with acetone —

232E

1/4 lb Duplicate of 156 E.

Old 7₂ 3% Sulphurous acid

Quill number 1

232 = 3% Sulphurous acid 2 days, washed & dried with ferric on surface. Should have been washed in ammonia to strip off — ground thru 60 mesh 10% new 7₂ mix added a 7 gram pulverized

1	1650	1690
2	1685	1745
3	1650	1670
5	1635	1680
6	1610	1590
7	1645	1660
8	1580	1585
9	1580	1580
30	1615	1660

233 E Old Fe. soaked K Benzoate
ott 219 – Hard to cocoach

1	1800	1745
2	1800	1735
3	1750	1615
5	1600	1525
6	1525	1500
7	1600	1535
8	1500	1465
9	1465	1450
30	1425	1430

234 old Fe K Chlorate.
ott 220 – Hard to cocoach

1	1845	1795
2	1850	1800
3	1700	1675
5	1550	1525
6	1675	1550
7	1735	1545
8	1640	1500
9	1548	1465
30	1700	1585

235 E Old Fa K Sulphite

Off 221 — Hard to work

1	1870	1950
2	1870	1945
3	1750	1790
5	1640	1650
6	1610	1610
7	1650	1670
8	1590	1635
9	1575	1595
30	1615	1590

236 E. Old Fa — K Cyanide

222 Off, Hard to work.

1	1845	1745
2	1750	1665
3	1735	1650
5	1720	1625
6	1690	1590
7	1740	1630
8	1640	1525
9	1585	1525
30	1615	1455

237. E old Fe (Hydrosulphite)
224 att, hard to reach
Price very accurate -

1	1180	1200
2	1660	1600
3	1635	1600
5	1650	1600
6	1650	1565
7	1650	1625
8	1595	1530
9	1595	1540
30	1810	1775

238 E old Fe K Bitartrate
att 225, no answer back.

1	1900	1900
2	1955	1950
3	1815	1815
5	1715	1720
6	1690	1680
7	1735	1700
8	1655	1675
9	1650	1660
30	1700	1705

239 F Old Fe Soaked 2 or 3 days
twice Cold Sulphurous Acid 6%
(Chunk 6½) — Soaked 2 days cold in
H_2O changed — then H_2O drained off
soaked Denatured alcohol
2 days — dried — at ordinary
all through — red — Alcohol sent
recovery sent to Weller —
all now are ground thru
60 mesh 10% Speedi Fe mix
added & make up into
7 gram packets for Smith
Hadley

1st	1630	990
2	1335	2075
3	1315	2140
4 *	1475	2245
5	1460	2140
6	1480	2070
7	1530	2085
8	1470	2090
10	1475	2110
12	1480	2225
14	1450	2225
35	1095	1770

* Changed Nickels — in low cell —

240 To the big lot of
Colonel Che for Mrs Rac-

100 Records — 10 Good
Cost Calculation
of 1000 for the
10 —

100) 1000 (10

[ITEM(S) FOUND IN BOOK]

EDISON CHEMICAL WORKS

THOMAS A. EDISON, President
H. A. BACHMAN, Vice-President & Genl Mgr
H. F. MILLER, Treasurer
W. H. MEADOWCROFT, Secretary

J. V. MILLER, Manager

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Telegraph Address, Via Newark, N. J.
Express Address, Wells Fargo, Bloomfield, N. J.

SILVER LAKE. N. J. July 9th/14.

Mr. T. A. Edison,
Edison Laboratory,
Orange, N. J.

Dear Mr. Edison;-

Report on Loading Tests of Iron Mixes
Made from Ferrous Ammonium Sulphate.

Your experiment numbers- 249 E
250 E
251 E
252 E

Tests made with Machine #704 - Factory Loading Dept.
" " by W. Archer, Storms, & writer, July 8, 1914.

Alterations to machine - Hopper supplied with two partitions to make small hopper, so that the small samples could be loaded into two pockets at a time. Arranged in middle of machine.

Samples considerably too small to allow full number of pockets to be loaded at once, and also too small to make much adjustment to reduce loading weight.

In each case, two or four pockets were loaded before the test pockets were loaded.

Following are the results;-

(Cont.)

[ITEM(S) FOUND IN BOOK]

GENERAL SUMMARY

Experiment	Dumps	Loading Weight.
249 E	14	8.66 gms.
"	14	8.67 "
"	16	8.86 "
"	16	8.93 "
Feeding O.K.		
250 E	13	8.69 "
"	13	8.35 "
Feeding O.K.		
251 E	15	8.37 "
"	15	8.42 "
"	15	8.56 "
"	15	8.46 "
Feeding O.K.		
252 E	19	8.93 "
"	20	8.79 "
"	20	8.98 "
"	20	8.995 "
Feeding O.K.		
Reg.Batch #1945	12	8.250 "
"	13	8.150
Feeding O.K.		

This is the same iron as the others but not pressed.

Details of these experiments are as follows;-

(Cont.)

[ITEM(S) FOUND IN BOOK]

Iron was pressed in 10" Die mobile

Experiment 252 E- Moisture 5% 21 KOH

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh; fines in.

Setting of cams, etc., same as for regular iron mix.

Loaded two pockets as preliminary;-

" four test pockets;-

#1 -	19 dumps,	Ld.Wt.	8.93 grams
#2 -	20 " ,		8.79
#3 -	20 " ,		8.98
#4 -	20 " ,		8.995

Feeding O.K.

Experiment 249 E- Moisture 2% of 5% KOH

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh, fines in.

2 pockets	- General test	- Dumps	15-16		
2 "	- " "	- "	15-15		
#5 "	For Special "	- "	14	Ld.Wt.	8.66 gms.
#6 "	" " "	- "	14		8.87 " .
2 "	- General test	- "	15-15		
2 "	- " "	- "	16-16		
#7 "	For Special "	- "	16-		8.86 " .
#8 "	" " "	- "	16		8.93 " .
2 "	- General "	- "	16-17		
2 "	- " "	- "	18-19		

Last four pockets high in dumps as small amount of iron was in hopper. Feeding O=K.

[ITEM(S) FOUND IN BOOK]

Experiment 250 E- Moisture 2% H_2O.

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh; fines in.

2 pockets - General Test - Dumps 13-14 Ld.Wt. 8.98 gms.

Increased stroke of cam to lessen Loading Weight.

2 pockets - General Test - Dumps 13-15 Ld.Wt. 8.97 gms.

Increased stroke of cam to the limit.

2 pockets - General Test - Dumps 13-13 Ld.Wt. 8.80 gms.

#11 " For Special " - " 13 8.69 "

#12 " " " " - " 13 8.85 "

Feeding O.K.

Experiment 251 E- Moisture 5% saturated LiOH

Pressed 2000 lbs.

Special iron #1945.

Thru 10 mesh; fines in.

Same setting of machine as last test in Exper. #250-E.

2 pockets - General Test - Dumps 14-15 Ld.Wt. 8.575 gms.

2 " - " " - " 13-13 8.495 "

#13 " For Special " - " 15 8.670 "

#14 " " " " - " 15 8.420 "

#15 " " " " - " 15 8.560 "

#16 " " " " - " 15 8.460 "

Feeding O.K.

In all cases the feeding seemed to be O.K. as far as could be judged with the small samples. No clogging whatever.

After completing the above tests, made a test with a small sample of Iron Mix #1945. Same iron as in above tests, but

[ITEM(S) FOUND IN BOOK]

not pressed, and just as sent from Silver Lake.

Setting of machine same as last previous test given above.

2 pockets	-	General Test	-	Dumps	15-16	Ld.Wt.	8.135 gms.
2 "	-	"	"	-	"	15-15	8.285 "
2 "	-	"	"	-	"	16-17	8.055 "

Added more iron to hopper.

2 pockets	-	General Test	-	"	13-14		8.245 "
#17 "		For Special	"	-	"	13	8.350 "
#13 "		"	"	"	-	"	13	8.150 "

Feeding O.K.

Possibly this packs in hopper slightly more than the iron which was pressed, but the general feeding was satisfactory to Archer, and Storms, the foreman.

Yours very truly,

J. P. Miller

[ITEMS(S) FOUND IN BOOK]

MEMORANDUM

EDISON STORAGE BATTERY CO.

July 9, 1914.

Mr. Bachman:-

Following report is of 3 bottles of Iron Mix which Mr. Edison sent over July 8,1914, for loading weights and remarks.

Mach.#704 Center of hopper was divided so as to load only two pockets. Machine feed fingers open full.

#1- Sample- A	pocket	dumps =	10	Weight	- 8.910
	"	"	10	"	- 8.790
Feeding O.K.	"	"	10	"	- 8.830
	"	"	10	"	- 8.770
#2- Sample- A	"	"	10	"	- 9.090
	"	"	11	"	- 9.140
Feeding O.K.	"	"	10	"	- 9.100
		"	11	"	- 9.230
#3- Sample- A	"	"	9	"	- 9.110
This sample did	"	"	10	"	- 8.730
not feed as good	"	"	9	"	- 8.310
as the other two	"	"	10	"	- 8.570
samples.					

Notebook Series -- Notebooks by Edison
Notebook, N-14-04-30

This notebook was used by Edison during the period April-July 1914. It is the first of a four-book series continued by N-14-08-07. The entries pertain primarily to the transfer process involved in disc record manufacture and to the production of record blanks. The first part of the book contains notes on the problem of wrinkles on transfer plates and possible solutions to this problem. The entries describe experimental transfers made according to different production schedules, with various varnish compounds, or with differently prepared transfer plates. Several notes indicate that many test results were invalidated because a mute was mistakenly left in the phonograph used to test records for quiet surfaces. One entry toward the beginning of the book relates to the solution used in the electroplating processes involved in disc record manufacture. Entries in the middle and end of the book describe the production of experimental blanks and transfers and experiments to improve the varnish. The last entry establishes a new "standard varnish." Employees Jonas W. Aylsworth, Charles Dally, William W. Dinwiddie, Archie D. Hoffman, Charles W. Luhr, and Sherwood T. (Sam) Moore assisted Edison with this work. The front cover is labeled "No 1 Disc." The pages are unnumbered. Approximately 135 pages have been used.

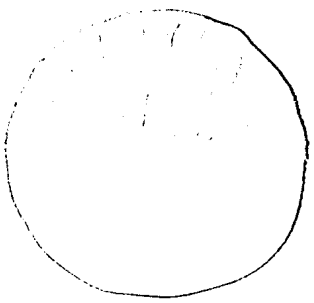
April 30 1914

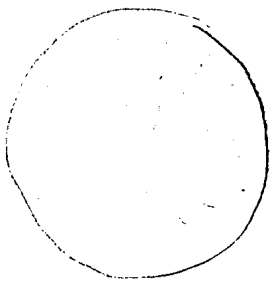
Disc Expts

RO is due to Varnish –
It has taken 3 yrs to find
Thus can only get it when
get blank perfect coating
Thoroughly by Rubber pad

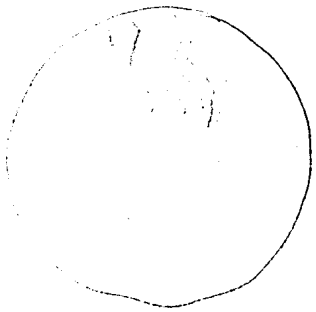
The Var in drying wrinkles,
generally radially –
but ~~[illegible]~~
~~[illegible]~~
~~[illegible]~~ so far the
thick part of Varnish gives
most wrinkles –

+ these wrinkles give sound
~~[illegible]~~ print, the wrinkles cannot
be seen in record of
print but can only
The wrinkles are out of





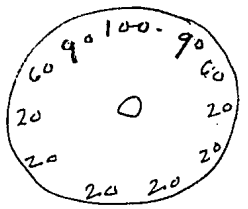
Slight show of wrinkles



Dec 30 1914

hear when playing record —

If a Record shows a Run out say call RO 100% surface - it will be like



There is going to be a very difficult problem to solve, the veneer next to plate is very much affected the outside is dryer as stuff goes off there always leaving some underneath,

Nearly Every transfer plate have these wrinkles on it not one is free of them

Apl 30 1914

By staining with ½" white
Arkansas stone, the tips of
the corrugations are very sharp
by staining down the they
disappear, the RO penetrating
disappears —

These corrugations cannot
be seen in micro —

We tested the pressure in
receiving on plate —

The transfer given the
RO - Evidently wrinkles
show them very much
weaker than on plate

Oct 30 1944

then eleven percent They show them very much weaker —

To fix —

1 = Rig up needle + stone pumice + etc + Tone them off

2 = How Varnish so they do not occur

3 = Dry Varnish so they do not occur

4 Get low viscosity Varnish Rec + they occur

5 = Double flow plate

6 = Put something into
Change Vapor Tension

7 Dry in Vacuum

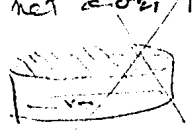
8 Bake to rubbery point 160
+ press quantity on precured
steel plate or glass at 120°
Take off pull + Jab + Run
Oven hequal - Can do very
quick -

9 = Put Vacuum on by spraying
so Alcohol dries as You press
do it by machine +
stretch for all Vapor -

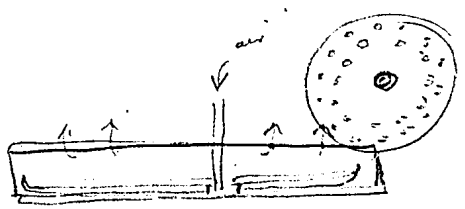
10, Dry little Amyl Al or Acelate Amyl. to stop drying surface - Two Coat,

11= Flow a very thin preliminary flow of thin Varnish 3 times or twice the celeaning dry + then flow Lacquer or Varnish -

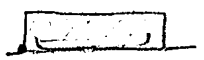
12 Let it dry with Cover on wicker + Mosquito net over Top



13. No Vac



14-



cloth all over
4 Blow air
against no cobwebs -

15- Change the schedule of Rumm Oven, stoping draft so it like old way leaving Cat. Vapor exhaust - so can not to dry top. or front

16 Flow 25 cc Reag V dry 1 hour then 250 cc water,

17- Add to Each ~~285~~ grams of Vermiculite, 14 grams Magnesium

18 Ditto 28 grams Magnesium

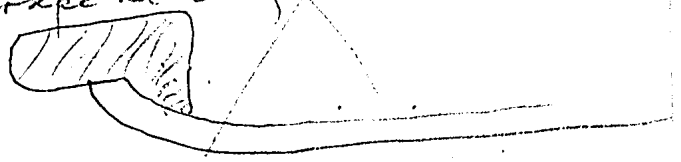
19- Trichloroethylene 28 grams —

14½

Note – Cracked brushed over a well wet dried plate, take out wrinkles after 1 hour in air warm enough to touch back of hand comfortably but RO – This is easily Cured These plates were 24 hours for dried plates ready for oven too soft to stand enough –

20, very fine Light ~~pressure~~ that will not pick those Varnish Lake around edge, 2 or more coats pulp in Bath to keep dissolved coat a few minutes after flaming –

21 – flow plate coat pulp from corner scrape at Edges –



Scrape –

22 = ~~Rub~~ Rub a little Assume rag around Edge –

No reaction or Pure

The Chemicals on Vacuum that gave least or no RO is

365 5% Pararosaniline Acetate No RO

382 - 5% Acetate Buffer "

473 - 3% 5% 12% Parachloroaniline "

455 Alkali Blue 6B 5% "

May 1 1914

367 cc Vermont Coal Tar Test with Para in —

367 Para Rosaniline with 14 grams of dry Ferric Chloride in —

367 cc Vermont Coal Tar Test with Para Added in 1 of 6 7 grams of dry Ferric Chloride —

~~365~~

367 - cc Vermont Coal Tar Test with Para put in - 8 grams of Parachloroaniline —

— Yellow Eosin flow + No waves

Phenolsulphonic alone in
Varnish to the usual Parts
as regards – gives after 6 mths
230 Fahr a pretty light yellow
transparent Varnish –
apparently no change of
Refractive Index – Hardness
Coherence Adhesion
(Chemical Equiv) Unchanged – It will
Dry light

Transferred 2 pCatechol OR
Pyrocatechol & the Triacetate OR
Compound – It work Req
No Triphenylmethane –

May 2 1914

367 cc Req Varnish with Parts Pentane in
14 grams of Camphor –

367 cc Req as above
with 28 grams Camphor –

367 cc Req Varnish with Parts Pentane
with 14 grms Ortho – Nitrophenol –

ditto 28 grms Nitrophenol (ortho)

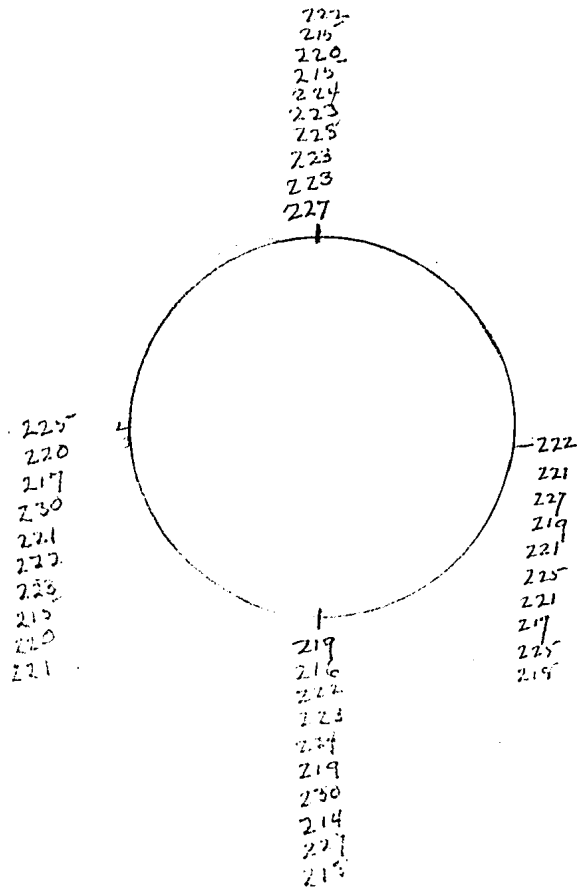
367 cc Req Varnish with Parts Pentane
14 grms Para Dichlorobenzol –

ditto 28 grms " "

367 Reg Var with Para + Penta
with 14 grms Nitrotoluol (para)

ditto, 28 grms "

So far only ones that are free
of Waves & have zoom of Coed
are Phenacocephalata
& the other is Paracollaretandin
both w. Chaud. Para & Penta -



May 1914

Moore reports need Blanks 350 of them Backed only good 52% good — T Blalock Local cost a decent oil spatter on Orange Mountain yesterday had trouble from Chris's Clamped Rocker Arm — It was a nice Oil — Hoffman testing to oil wood spot on — Compared to need Blanks

227	223	223	228	223
222	221	227 010	219 012	221
219 008	216 007	222	223	224 003
225	220	217	230	221

224	215	220	215	222
225 006	221 015	219 004	225 012	218 004
219	230	214	227	215
222	223	215	220	221

Moore weighed some this morning 390 - all of them — I weighed 394 -

May 1914

Possibly wax marker with a buff
the same edge as the knife that
Cut record & held down by a
spring & sharply pointed
steel. would answer if it
very fine & then graduated on
paper copy would give time
records —

Also with 170 Condensers
press it up at 150" fdn
with 1/4 inch glass plate
on the end & the Convenience
present from Mather —

Put dyes in

These tried long ago May 1914

		% Sol.	Transfer	Good
361	5% Perchloro benzol	81	21	17
364	Alpha Naphthol	91	22	20
365	5% Paratoluolsulfochloride	91.6	24	22
368	5% Methotolylene diamine	83.3	24	20
370	5% Parachloraniline	83.3	24	20
385	Sat Chloride ammonia	100	13	13
381	Phthalic Acid	93.3	15	14
382	Acetanilide	86.6	15	13
415	Reg P Phenylene diamine	100	12	12
419	Acetate Magnesia	91.6	12	11
436	Salicylic Acid	83.3	12	10
439	5% Safranine base	91.6	12	11
440	Phosphine	90	48	43
521	Reg P + Para	100	24	24
519	Gum Dammar	94.4	18	17

419 Brantford Yellow

370 Parachloraniline gives
Dull khaki unfast —
Transparent yellow
places — no colors —

May 1914

Dope used in preliminary $CuSO_4$ bath - followed Water Solution of Eosin accurate perforation of Celluloid & not as Celluloid in suspension —

½ part filled Thin Lacquer and few blue specks, Lacquer from some red —

Put some dope in the Reg $CuSO_4$ sol & filtered — no deposit but more specks caught on filter showing both Lacquer floating particles in —

Tried some of the dope dissolved in Amyl acetate black with some bleach nearly dissolved it showing that it was a very finely divided Celloid — Precipitating it with Water and Dissolved with the fumes of the Chloroform — Ethyl Acetate —

May 1914

We now try to get carbon out of water deodorized dope no acid by bone black treatment 2 or 3 times — + use it in cells to see if the gunk on coating

Agitating Dope with Quick lime no change, Lime Plus Lime in Bone black don't effect it —

I get a solution water white, Ammonia has tinted the Rod before ... Bone black + the ... white after ... Bone black — The ... white is ... + inert whereas the blue is OK

11 May 1914

& Reason that the effect on Accuracy due to the Collodion position & that the depression not as true Ovals but an Extremely Irregular Depression Lake Erie Ice Co Even finer —— Erie - A

New Blank, new loading - Rubber ½" plunger in press & 475 grains powder Cupples sealed off.

1st Lot. 326 - NOT BAKED -
Transfers - OK 288 Discards 48 — Now 320 — 85% — discards all Cracked & Irregulars

2nd Lot. 1187 - BAKED -
Transfer 792 - Dis 395 — 60%

All print OK — its Varnish & its practically safer to Trade —

11

1st Print of RO talk cover
best proof so far — Compact
hair —
2 more prints both RO 1 quite strong
face edge a trifle dark OK - good superfine —

May 1915

Daily just forwarded two Exts

15 plates flooded with Varnish
Without Pcra or Pentc but
with 5% Phenolsulphonic
acid —

7 transfers made 6 OK
perfect — 1 had a turd in
Label, but w OK Gummed
only one yellow spot on
whole 14 plates & this close
to blank as it was on both
edges —

This fine Varnish — are printing
them to see report / Cracks
using Cracked blank mended —

1 plate blistered in oven
flows very much as seen by
Edges of transfer

May 1914

Also Daddy Glanced 14 plates —

Vermicid — 4% Penta,
no Paraphenyl but 6% Paracresolin —

OK 2
3 Birds on ground
1 " " bathside —
1 " " 1 perch,

This is rotten,

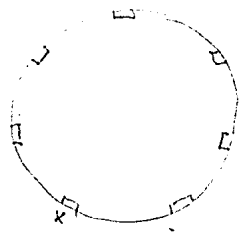
Because Paracide
Condenses & robs the 6/4

May 13 19[illegible]

We put 2 grates in brass plate 3/16 thick

[illegible]

[illegible] faced with [illegible] and lined #8 [illegible]



put x bearing pieces on edge

put in press heat to 200 Lbs — gradually raised heat till Condensed came out nearly perfect went in again a week to prevent cooking — finally used 85 Lbs steam

Very promising —

With no Para or penta, - RD not so bad as Reg'l
Reg Var Buffed & not buffed -
no difference in RD but unbuffed
has a slightly better appearance

Prints -

OK 1 -

Bad Cracks 1

May 15 1914

Nearly all Cakes baked in Chem Lab -

No warping on these Trials

Reg Varnish without paraffine or Penta -

OK 4 - all OK that were Trimmed & good till no flowers -
Run Thru 15 plates, 7 not used had Small Cracks - Nearly Deep but Top kept or Cracks & Chips & could get out OK

Reg Var with Linseed Petrolatum -
Dried on Rack Covered with Newspaper 1½ hours
5 Trimmed -
3 OK - 1 Cracked 1 Burned Bad
Edge - none were filled Appearance
that Either Para or Penta or the
makes Cooked plates, & without
them no Cooking - Reg about

11

X

Surface good—
2 surfaces have no RD
2 " not very much
Much better than Req

RD. worse than X

Daily X

5% 33% Sol Phenolsulphonate
+ 2% Paraphenylenediamine
Plates OK
Transfer acc OK 7

Daily

10% Sol 38% of Phenol
Sulphonate. Run same term
as X above plates free of
bubbles —
OK 1
Cond 1 6 —
Burn 3
Heater cracked at Edge 1
Schedule too rapid or
Rubber paint too high —

2 Prints ←

2 faces Very faint RO
2 " Light RO Outs –
Pretty good Var
general surface Smudge
Uses Reg Var –

2 - Prints RO all 4 faces but
not Bad

There is scarcely a doubt
but the wrinkles in Varnish
Causes the Run Outs,

Daily
Varnish No Pewter or Pearl
5% Indigocarmine acid
9 Printed all OK.

Daily
10% Indigocarmine
6 Printed all Seconds
Birds — Thin shows
~~that~~ too much pearl ink
hardening — or The 10% Print
all dried down very light
Cloths Hard under Rubber
Rubber 6/4

9

Beta Naphthol

8%

All 5%

5%

from old record book

Resorcin (coal) 5% No RO - 2½ & 3.5% same +
Benznaphthol " 4 OK 1 v slight RO
Para Toluolazobetanaphthol 5% 4 RO 1 vvv slight RO
Paraamidophenol 5% 1 Tested 1 OK
Metaphenylenediamine 5% 2 Tested No RO
Acetanilid 5% 5 OK No RO
12% acetanilid too much —

Bromo of A 5% 4 No RO 1 vv slight RO
Acid Diazo 4 BNS Conc Dye Coll. 4 No RO 1 vvv slight
Cuts a little —

Auramine 5 – 4 No RO 1 moderate
Acid Green GCX 5% 5 OK No RO —
Alkali Blue 6B 5% 5 OK No RO "

561 – 3 Para 5 Beta 12 = 11 OK No RO 1 slight

Schedule run in Dalby's Cyclinder – to get rid of bends + bubbles, by getting all heat out early + just go to rubbery state + heat then long time

Started at 120 Fahr
One hour to reach 140 Fahr
Held 2 hours at 140 "
Then took one hours to reach 225
Held at at 225 for one hour

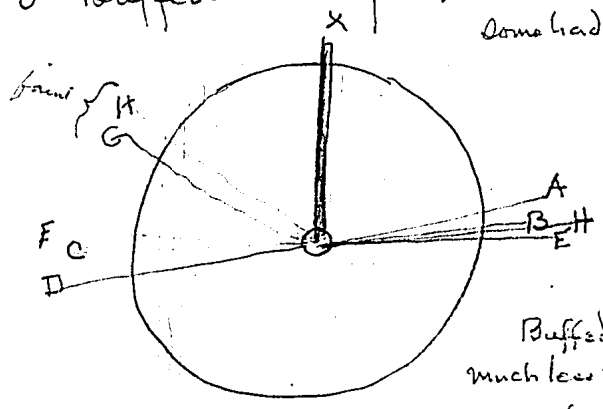
Took them right out in air at 225°
No cracking –

Plates showed No bends, blisters or bubbles except 1 to 3 each plate from dust good looking plates –

Transfers 5 = all OK except one due to very bad blank

This schedule seems good

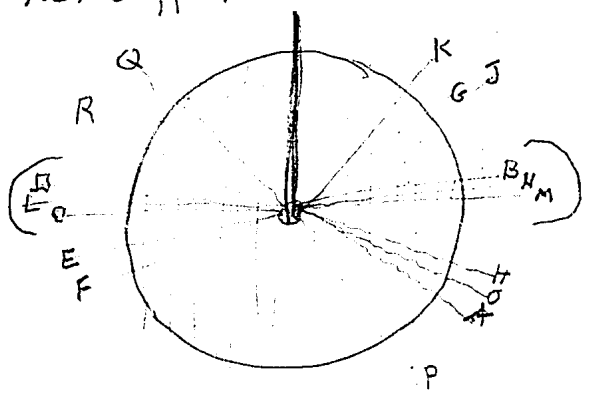
8 Buffed Transfers: Tracked moved
Some had no Runouts



Buffed very much less ROs & surface than not Buffed

X represents grain of plate

Not Buffed



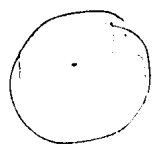
Evidently dust also makes Runouts as well as grain

Paraform Varnish in place 6/4
Run in Oven Rig—
They are soft Cook Click finger nail in— Evidently wants higher & longer heat for Paraform Surfaces Even but ask 1/2 high surface —
Will Transfer— Buffer Print on tracked needed —

All Paraform plates Stuck on Transfer— Not heated Enough— To harden —
Paraform is a high temp long Heating Hardener

Dally Selected 22 plates

That didn't show straight grain of metal



had none of this -

Used reg Vermuth Reg Backs

Dally schedule

Transferred to Practical —

ACC & R — Very fine velvet surfaces — of the 21 surfaces (1 surface had rag plate)

14 had absolutely no Run Out — that could be detected by horn on a tracked blank

One had V RO very soft.
3 " VV- "
3 " VVVVV hardly hear.

This seems to prove that there is unequal shrinkage due to lines on metal — one way shrinks Easy opposite no shrinkage —

We are now getting rid of the Mill Roll

Marks would furnish an surface
to Circular and any Relative
Marks will be Multiplied
x(150 Words of the Record

The surface in these records
~~[illegible]~~ to perfectly
a configuration a hard to beat

Dally Run on his reg Schedule which is OK for reg Varnish

Beta Naphtal 5% of cut of Resin in Reg Var without Penta or Para —

5 = Birds + Cooked — squarified out at Edge — Wants different + higher hardening Schedule or More 6/4 —

Benznaphtal 5% of cut of Resin

2 OK 4 Cooked Birds — Schedule Meat 6 + higher + Longer heat or more 6/4 squirts out at Edges but not as bad as Beta Naphtal —

Rosolic Acid — 5% of the Resin Transferred 5 Plates All OK - Dally Schedule — Look good — dark — will print —

Rosolic Acid - Has the regular run outs + all OK but RO — shades run outs not in Varnish as Exposure last year gave no RO — Guess its Striated plates —

surfaces astringent not as good as Para — Metaphenylenediamine seems better than Acetanilide

5% Paraaminophenol (Cresol)
Red Transparent, no bubbles —
good — Very black

Transfer | blisters Cracked | side Cracks | sounds hole

All had cracks on Edge	1 OK	Prints	VVV–VV
"	1 OK		VVVV no
"	1 OK		no no
			VV no

no — one side OK other Cracked + Ckd blisters Ck to Hole

Acetanilide — Transfers — Prints

OK III		VVVVV — VVV	full cracks
Bluebird Egg	1 side	VVV — VVV	Excellent
Birds one hole	1	no V	
		no cuts	

9. surface not very calkers

5% Acetanilide —
Very light yellow — Curious little blisters 1/32 to 1/4" round — many have a hole in Center, some none, Thin Cracks are if impurities in spray in all Varnish when dried no bubbles, Metaphenylenediamine don't seem have any Coherence Acetanilide to Phenanthrene will this accounts for all plates were varnished by Evidently gas was formed after Rubbing off high spots but not from in Solid particles,
all had Cracks on Edge
Except 2 surfaces

These results show that my old Experts with Various Acetanilides were NG —
Must first use a definite Standard see how they act & then allow time & heat for Varn. The 6/4 till that particular Acetanilide gives good results —

Metaphenylenediamine 5%
plates look good — dark —
Transfer OK III = Print,

Prints

VVVVV — no	only 1 had cracks on Edge
VVV — no	accident —
no no	Very fine surfaces on all except cuts a little
no no	on small print

Thin Varnish appears perfectly Acetanilide Clear — + OK to Phenyl Enough = no Acetanilide — looks 100% Transfer + Print, might commit a little more hardening to Top & cutting on small its cheaper than Para — 6.75 | mk K Meta 6 mk K

Daily schedule

Auramine, 5% acc vol soln

Plates

OK HH HH – practically no bubbles or radial waves –

Transfers

OK	Bad blank	Making Bad blank today
OK	Little Cooked	
NG	Cooked bad	
OK		
OK	Cooked	

Note ~~blanks~~ Cooked then note

Brown & A. no cooked only

1 beg blanks. Some blanks

2 parents

VVV–VV no. no surface pretty good no cut

start bad, may be mould –

No Cracks on Edge

Faulty Schedule

Acid Violet 4 BN.S — all Soluble

Black

Plates OK HH IIII

(Whole came off plate - plate highly cracked -)

Strange -

Some radial waves & some bubbles Very Black

Transfers

OK -
ng — bad cracked Bad Blanket Today
OK
OK
OK

2 printed VVV — VV
-no VV - pretty fair
surface scratch. start bad, may be
mould wiped

2 printed 1 Cracked on Edge

Daily schedule

Bromo 4A, Red Radial waves

Plates OK IIII IIII

Thick radial waves - rather prominent - heavily any bubbles -

Transfer 2 prints No Cracks on Edges

OK	Print 2	
OK	VV – no Ro	Bad bubbles Looking -
OK	VV no Ro	
OK	Surfaces good	
NG	Big split bubbles.	

All stands very good - perhaps more edge cut [illegible]

Its strange that 3 Para 5 pcnts are bands + flatten —
while this has no bands + OK

Apparently a Dow Schedule must be found for each Varnish
There 2 made in Dallys
Dow 4 Schedules + transferred same time

Also in Reg Varnish after w a Varnish in preparation it was found the schedule

or if Resin has excess of X Phthal it will bind up on reg schedule, if not enough it will crack on standing

Daily Schedule

5% Paratoluolsulfochloride —

Plates —
all OK. |||| |||| no bubbles
flows even — No radial waves
Transparent red light. Very few bubbles — Look good —

Transfers
OK ||||
Cook ½ area of Cutter, Bind Brush

Can't wait anything on the transfers
Daily range range ...
Thursday working off to dry

→ perhaps Varnish should be made up + no 6/4 used, Then Take sample put in 6/4 + run 100 Transfer if OK proceed if bands set. Store 6/4 — + try again —

Dacca Circle

3 Para 5 Peela —

All OK some radial wires but as Var is dark they are not conspicuous Chain of transformers only four Each Bank — Surface all dry

Transformers —

Bushes both sides IIII
" one side I

Very Bad —

These 2 tests surfaces varnish
has covered on the machined

These are plates that [illegible]
ground but the tool marks
of grain of the metal & then
polished so marks would be
Concealed —

371 Dally
Plates made with spiral grooves in
plates made with Emery paper
Reg Varnish No 371 Dally —

OK 1111 — transfer OK 11 one spot 30 min film of
Can't hear any surface on Holder Gun Oil
Dally Sharp ring quiet —
Mark in Varnishing is off in Dally
another mist varnish

370 —
Plates made with spiral grooves
the 1111 marks being ground out with
white Silicone — Reg Var
Dally 370
OK 1111 Transfer OK 11
Left but not marked
Can't hear any surface on RO on any
of the 4 surfaces — Dally is a
very decent — Mark in my hand
is off losing

Daily 368 -

Dyeberry Seminole CP

Very bright yellow - full letter number bars

OK HH LH

Transfer OK 1

Left OK 1111 -

Left base RO 1 ... Chinese ...

2nd ... panel beam RO ...

Replacement ... check ... -11 -

Dolley 367 -

5% Paraphenylenediamine -

OK10 - all ok - scarcely any bubbles
few vacuoles - has covered all
surfaces

Transfer - OK HH

Dolley cargo hauler Hunting Cor -

Here are only very pitted & collapsed
fixed & packaged/rolled in rubber
dressing right after

All 4 decontaminated/Coast Kenn. very
scarfaces - Dolley cargo very
quiet print

2% Paraphenylenediamine

Dacca 372

Plates - OK IIII IIII has increased
time breaking plates — new batch
etc —
Transfers + OK II
Birds III
Bad blanks —

2 Records Tracked —
Cant learn any RD a scarcely
hears any records with red light
Cant work at any hearing on off
or not — June 4 1914

3/s Pamphlet plane drawings
DACCA 3/B -

OK |||| |||| = small waves — big swell
fine looking platoon no trouble

Transport — OK ||
Very small sand table 1
Bullock carts ||

Note: 29 3/s Pamphlets —
5/s none also Nth of route —

2 Records Cannot locate any RD
& consignment locate consignee

Modern Dolby
Dolby 360 — sealed repaired + patched plastic

3½% aluminum CR coils —

Plate OK — !!!! !!!! — very
peculiar, but looks as if good
Recording records how
Like Petite recording [illegible]
Transfer of programming stereo
Transfers — OK !!!!
This is strange when 372 was used

2 Records — 1 shade RO —
1 considerable RR
surfaces can hear, and not so good as
2½% or 3% Rearrophony Columbia
which have general accuracy
so good that it would [illegible]
to hear it —

All expts on surfaces
around this time vitiated by
the Mute being in reducing
over knowing it

375

Daily 4½% Mostly Nickel, 3 BP -
Very dark

Big bubbles HHH
Fine bubbles III

Dacey 376 — 5/5 Indiana RT

Plastics,

Hanville beg [illegible] II

Beg bubbles IIII

Few bubbles IIII

Dally 374 Indiana Blue B 4/5
Indiana Blue

Cooked one edge big bubbles for 1 sec 1
Big bubbles many one side LHT IIII

Van 301a

XXI — 60 Transferred
26 OK
24 Discarded

10 Cracked Cover
9 Left Ckd
2 " not ckd
2 pull rest
1 Cracked Vac

43%

June 2nd 1914

Edison XXI (24 = Not Baked)

Experiments on Wafer Sealer for Jacket & Tanks —
2 min contact with steam on seals
Then increase pressure to 1000 lbs total
for 7 min & cut off steam cover
Keep up the 1000 lbs —

Transfers OK. IIII

Blistered (Cracked) IIII IIII II

Cracked Cover OK 1

Blistered Cover OK III
Bindery Seal Cracked 1
Burned 1

43%

XX2 97 Transfd—

OK 85 — 12 Discarded

Cooked Center 1
Left Ckd 4
Thin margin black 3
Pull out 1

87%

See next page for XX2

Edwon XX2

24 — Not tucked

2 min Contact at 100 Lbs steam 5 minutes at 1000 Lbs steam on Thin Coat of Caramel Coat Cooking at 1000 Lbs

OK HHT HHT IIII

Blistering HHT HHT

58.3

1-Cup of XX3. 24- Not baked

OK 𝍸 𝍸 𝍸 𝍸 I

NG Burnt 1
Comed Burnt 1
(cracked) effective 1

91.6%

XX2 61 Transfd
39 OK
22 discarded

Cracked Centers 1
Left Ckd 2
Left Ckd on edge 16
Pulled out 1
Ckd Waves 2

63%

XX3 – 50 Transfd
47 OK

Left Ckd 2
Thin Margin 1

Van 301 a
94%

Edeco XX3 24- Not baked

5 minutes Contact, at 100 lbs steam, 3 minutes at 1000 lbs – Cool Keeping rose evenly on

OK 𝍸 𝍸 𝍸 IIII

Red Comed III

NG Pulled out 1
Burnt 1

91.6%

XX3 – Prints,

OK 𝍸 𝍸 IIII IIII

Doubled III

82.6-

Not filled, Ckd on Long Waves 1

XX3 – 50 Transfd
45 OK
5 Discarded

Left Ckd 4
Pulled out 1

90%

Edison XX 4

Not baked -

3 Minutes Contact 100 Lbs
Steam, 5 minutes with 100 Lbs
steam on at 800 Lbs pressure
Cut of steam cool out
Keep the 800 Lbs pressure on

We are to make the 4 XX
100 Each 50 baked 50
unbaked & Drawings 10 each

OR |||| |||| |||| |||
Cooked Crates Nq 11
Blueprints Nq 11
Nq Blueprint 1

7/8.25

Edson XX 5

6 minutes contact at 100 lbs steam pressure then 3 min at 1000 lbs with steam pressure at 100 lbs then cool & keep the 1000 pressure on

Dup Dalby 371 – made out of Emmay proof
Transfers OK HHH —

Mill ground plates
Transfers OK HHH —

Dup req Van req proofs 370 Dalby
Transfers – OK HH
Blue Water Creek 1

Dalley 382 Green M 2½%

Plates
OK 1

Lots bubbles at edge one place runners pooling to it = 1
Bad, peculiar direction = 1
NG, left there were not baked enough
see greens lighter & slip face crazing
check temper used in —

Dalley 381 – Acid Green GCX 2½%

plates OK IIII IIII

Some bubbles, Can't stick mark in —
baked OK – / Waves Convenience GCC —

Dalley 380 – Acid Green BB 2½%

Big Blister III 50% – some damage
OK IIII II

Jan 6 1914

Dolly Selected 10 Varnish plates — The Varnish Showing Green patched — Transferred them — All were OK —

831 — 6-1-14

Hoffman make Enough powder for 1000 Blanks Each 1st Lot to be Scraped as now — 2nd Lot to be #830 mixed old way, grind & Bag Each Lot after 1st Screen from the time of Scraping 830 make Blanks & work

Blanks old & New Lots

Oven 7 —

Transferred 108
OK 54
Discards 54

Cracked Cover	28
Left, Ckd	16
" " Edge	7
Ckd Var	2
" Wrong	1
	0

50%

832 310 Transferred, old schedule

OK 200
Dented 110

Cracked Center	9
Left Cracked	45
Left Cracked on Edge	29
Left not ck'd	5
Main Margin Edge	14
Duc out	5
Cracked wrong	3

64%

Run Herman a loaf of powder as you can now make it Enough for 2000 Blanks / Bag Two Flats, The 3rd / Loaf run Herman make
#832 Hoffman
1000 Blanks right away
Run The 2nd Loaf in #833 Hoffman
& The 3rd Loaf of Ear 72 hours
#834 Hoffman
Another

#835 Haffner

Make another lot of blanks ground account

70 Them 180 needs Keep 24 hours + make blanks

Old blank schedule 309 Van

Transfer	108	
C-R	62	over 6
Duo cards	46	
Cooked Chicken	29	37%
Left Chd	5	
Left Chd Edge	10	
Chd Van	2	

#837 Haff

3½ to 1 Feeder & Cooler

Feeder mixed cc & coop

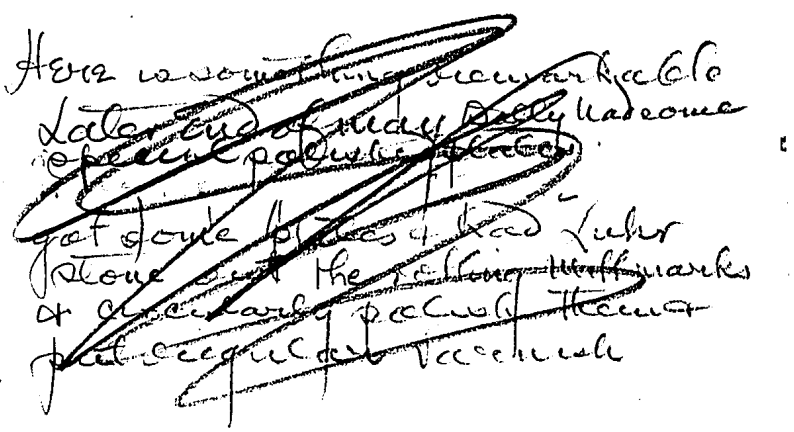
Mended seam on groove

Old schedule ordinarily

Inspected	108	
OK	63	Over 7
Discard	45	Lot 309 Van

Cooked Cooler	16
Left Ckd	17
Left Ckd edge	7
Thin Margin redapplied	1
Pullout	1
Ckd Waves	1
Ckd Van	1
Misadjustment defect	1

57 2/3



Not good — The photos had a
White on it + I destroyed
it, it got moved + produced
these fine records when
removed the backed
records had pitting
surface + irregular
RO

Remarkable -

Last week Daddy had
some plates polished +
typed up. These had very
Warwick put on the
surfaces were very good
but some run outs — The
irregular plates + Vera had
fair surfaces all had
strong Run outs
about the 30th Daddy
had Luhr make some
plates with the straight
Mike roll marks ploughed
out + polished circularly
they Vera cuts These
plates had a remarkably
smooth surface Edison
Could scarcely hear + no
run/outs, This Edison
attributed to his hearing
gone bad, Daddy & Carmen
The test surface was
faint, We duplicated

MG

Mute wasn on

Then week seq Van again
& dec no rain but general
surface Edwin could detect
heat

But Dacey retrieved
pounds from very bad
streaked places,

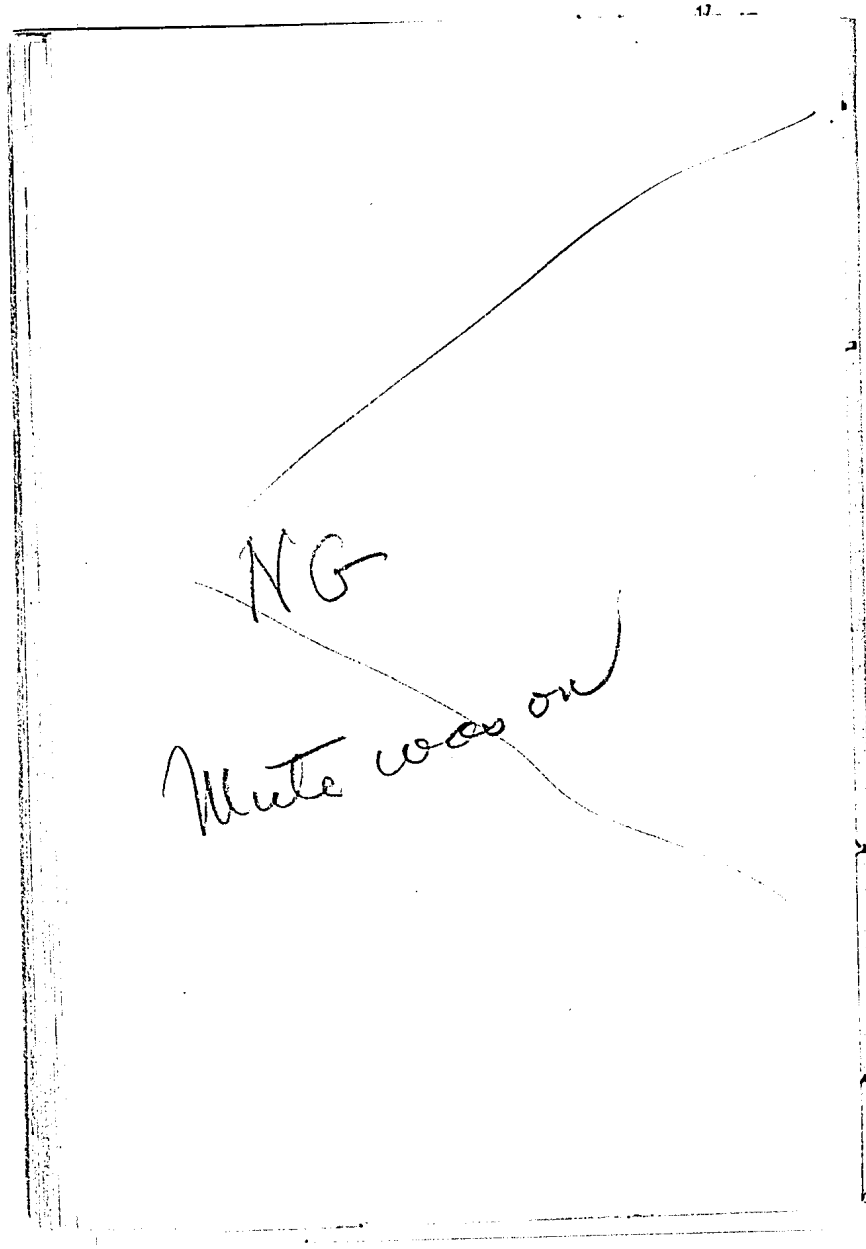
& surprising to say
the general surface of
this was fast not quite
as fast as the standard
plates & although there
was rain only they were
also very fast 3 or 4
times faster than the
same standard test were

Now the only change
we have made is that
on the 28 & believe we
changed developer
Ovens & made harder
transfers & on the 2nd
of June we changed

Doubtful on account of the Mute

Schedule on the blanks XX3 —

Apparently the change in cover Schedule has improved Surface ~~Run~~ Run Outs although the places were little cracks which should have been Level & have RO are put on blanks which both Covers blanks have schedules



Changes, Better surface than these are impossible They are perfect even with adjustments they are Comedy perfect, What caused it,

OPEN or key 6 take back going to or new block the Return Connected on on XX3 or 6 ch = Run it down

June 4th old blanks old schedule

64% — 310 Transfer Oven 2
71% 227 " Oven mixed
89% 146 Oven not
29% 12 " 4
53% 108 " 1

Loss due mostly lifts + lifts ckd edge

Total 54.6

Old Regulation

108	50%
108	57 %
108	57 %
1166	32 %
~~[illegible]~~	~~[illegible]~~
615	76
560	60

XX3 Schedule working good

1152	78%
1214	85 %
2314	81
229	70
152	63
252	81
~~[illegible]~~	~~[illegible]~~
3412	77
194	84
252	85
199	87
1092	80
772	83
385	84
3544	89

} mixed from ovens

Average 80.5

15286 Transfer

12510 good without counted Commercials

Not Baked 194 84% } oven 1

Baked 199 87% } oven 1

Dalby 381 –
Acid Green GCX 2½%
Transfer
OK IIII before some amount.
old req schedule blanks

Dalby 380
Acid Green BB 2½ %
old Req schedule 6 blanks 37 samples –
Transfer
OK IIII – one subtransfer plate
was spoiled –

Dolley 382
GREEN/M 2½%
old Regd Rubber Blanket
Transfer OR HH -

June 9 1914

Without Mute which has thrown me off - The rumours was just as bad on stained plates coming rolling mill straight streaks are ground out by tank oil stone - Two on plate watch marks in ——

842 is the
Number of the used
Rubber packed
Blanket.

XX3 press schedule
5 min Contact at 100 lbs steam
3 min 1000 lbs at 100 lbs "
Shut off steam + Cool —

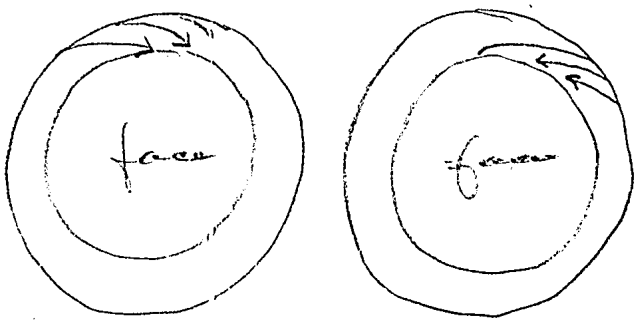
Paraphenylenediamin in solution
of H_2O in precipitated white
by 40% formaldehyde

Also Meta Toluidin — precipitate
reduce —

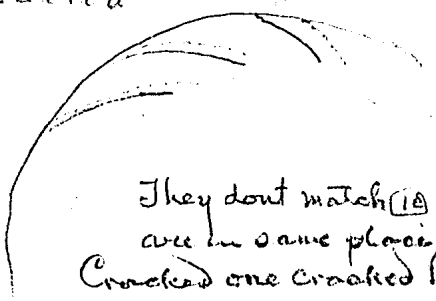
Think precipitate can use
Paraphenylenediamin in
place of diamines
in the ~~dye~~ Hair mechanical Examination
also also formation of
diamine yes to form
Black on Incubation —

2 Cracked both sides
1 " one side

Phenomenon



Opposite bands other + also
direction of cracks are
opposite Looking Perm. same
direction



They dont match (1) lines Cut
are in same place the thing that
Cracked one Cracked the other

XX3 schedule

Took 12 new blanks, [illegible] pressed them — Got 100%
[illegible] Conversion [illegible] 75%
Threw [illegible] Threw [illegible]

24 Conforms 16 no runout
4 VV faint
4 VVV faint —

The overgrain are at least twice
as good as on regular old
Schedule blank

June 10 1914

Test,

The RO is extremely due to blank
Veneer must watch —

Also Tunes 48 Tunes mostly 1 or 2 discs Out

Wedding Winds exactly had	7
Visi d'Art	11
Dreaming	10

4 others had		4	each —
2	"	5	"
12	"	3	"
10	"	2	"
16	"	1	"

Inspection of Cracked Discards — 128 Discs inspected

Cracked one side + no good	26
Crack both sides but passed	5
Crack both " not passed	5
Cracked one side but passed	10
Edge Music crack passed	8
Edge " " not passed	30
Not cracked or poor print-passed	3
" " not passed	9
Poor Prints NG	25
" " + Cracked	7
	128

Edge music cracks	38
Other Cracks	53
Poor Prints	25
No Cracks other defects	12

I took 74 cracked records from sorting board just as they came from pressing process There was 43 times —

By seeing how many of each times ascertaining Matrix numbers it is evident that records have much to do with Cracks, for instance Kathleen Harriman has highest number 5 - but only 2 matrix numbers were alike — Guess can keep this line of research although its queer that with 160 records on board, there should be so many of same times,

big crack ball runs out or in according to direction of Cracks —

5th Lot.

New blanks, Rubbed XX3 Dalco clubs

100 Blanks made –
100 Transfers made
3 discards – one lift cracked, 1 pull out, 1 Corrected Varnish
97% good

Printing
97 printed –

one cracked – 2 poor prints, 16 knocks

as corrected 77% but knocks must show the process 77% + can be represented

97% –

100 blanks taken 94 got to final sealer

842 is new blank—

8th Lot

Made 100 – Transfer
84 OK
8 Lifts Cracked
6 Cracked Varnish
2 Mechanical Defects

83 Printed.
71 OK
11 Rejected for Mechanical Defects
1 Cracked

842 Blank

9th Lot

100 Transfer made
92 OK
1 cracked Cover
2 Left, Cracked
2 pullout
1 Cracked Cover
1 " Cover

Prints made 92 -

17 Rejected
75 good -
1 Cracked
2 poor print.
12 Cracked & Rejects -

842
Lot 7

100 Transfers made —
93 OK —
3 Lifts —
4 Cracked Varnish

Printed 93
OK 72 —
2 Cracked
4 Poor prints
3 Lifted off
12 Cracked & Cracks —

842 Blanks
Lot 6 —

100 Transfers made
97 OK
3 damaged

1 Cracked Cards
2 Lift. Cracks

Prints made 97
5 Rejected
92 OK.
5 Cracks

842 Blanks #1 Lot

Printed	Cracked	P. P.
72	2	0

Dolly received 842 Blanks out of this Lot.

This shows as far as 842 Blanks is concerned on 5 different Lots of 100 Each

We get an average of all the 5 Lots of

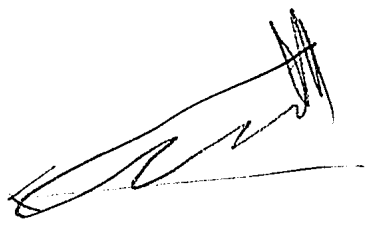
Transfers 92.6 % OK

Prints made 96.3

Only White spots Cracks & poor prints Counted against Blanks Cracks & Knocks Counted for blank —

Rejecting Everything Transfer & print — 76.4 %

Went to Shipping Dept,



4 Loaders 4 blanks min
22 hours 1320 minutes
5280 blanks
per unit —
4 units
21120 blanks
per day

June 15 1914

Schedule Times

Operations in rear loading system

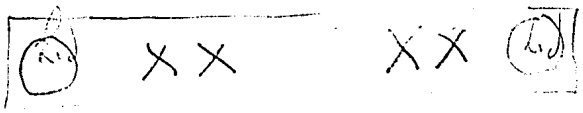
Rear loading — Pass to preliminary
pull out from preliminary take to shooting
Range — 2½ minutes
2nd 2.0 "
3 2.7 "

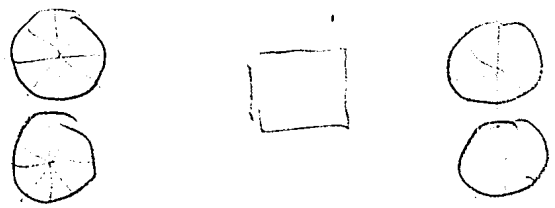
Preliminary — Shooting in preliminary
receiving — pulling out from shooting
from target to take to preliminary
Shooting 15 seconds

1 man on 2 rear loaders
1 per minute —

Whenever 1 man takes place under
naturalization 1 minute 20 seconds
with the 2 men will shoot
right 2 million Time or 1 target
40 seconds —

List put on in ½ min





Precooker near 4 hours in Vac Oregon Hot water used for heating — Started 7 o'clock

7.30	80
7.45	90
8	100
8 15	105
8 30	108
9 —	110
9 15	112
9 45	120
10	125
10 15	128
10 30	130
10 45	135
11	140
11 15	143
11 35	145

Water Heat probably NG

heat for heat blanche precooker in Vac at higher temp —

Var 343
Blanch 846
OVEN 344
Baked hours 9 3/4

Transferred	727	blanches
OK	498	
Discarded	231 —	68% good

Cooked Centers	100
Lifts	117
black Rim Meringue	4
Puff Out	1
Cracked Wafers	3
" Varnish	8

Evidently this is NG, probably water higher heat warming Steam —

2900 842 new Rubber blank transferred in lots of 100 over several days week many different Variations —

There were rec'd from transfer room — 82.75 % of all — Showing % good transfers to be that amount (ie) of 2900 blanks

After printing all — there was 75.72 of the whole 2900 — Heated appeared — but Cracked & rough surfaces are Cosmetic OK — Cracked & Poor ptn discarded

In all there were 2195 out of 2900 OVER OK for Slick (when Cracked) record are segmented —

Stop Lifts & Cooked Centers and — transfers will be 96% or better —

Out of 2900 842 blank transfers There were

Cooked Centers	104	3.6%
Lifts	385	13.2%
Varnish Cracked	82	2.8%

Total 19.6%

Discards —

Cooked centers are due to
1st Varnish Too Thin in Center
2 also blanks too Thin in Center

81st Lot. 9 3/4 hour oven Oven No 8

350 Van 842 blank - pressed 600 lbs
5 min Cooked 3 min 600 lbs cool

Transfer 100% good!!
Prints —
6 Knicks
2 Cracked
1 Rough Surface
} 9 - for reprint

3 Cracked —

97% including reprint —
85% Discarding reprint

85% To shipping

600 lbs pressures gives poorest general surface that 1000 lbs pressure probably be used

350 Van 9 3/4 hours Oven 8
842 blank —
B Crank
5 min Cooked — 3 min 800 lbs Cool —

Transfer 89% OK
1 Cracked Crack
10 Birds

Prints, 86 printed 3 used on tracked mould

10 Poor prints
1 Cracked

17 for reprint —

67.4% of those printed OK

If reprints included 83.6% of those printed OK
or 75 out of 100 To ship
If reprints OK.

842 Blanks

Picked Even Vac plates 351 Vac 9 3/4 oven

Transfer 75% OK
8 Cooked Center
3 Lifts
14 Cracked Vacuum
Prints – 75 record –
9 poor prints
2 Cracked 64 good

Even plates deep 842 blanks
351 Vac 9 3/4 Vac
Transfers 83% good
8 Cooked Center
3 Lifts
1 Runout
5 Cracked Vac
Prints – 83 printed 60 good
16 poor prints
5 Cracked –

These results tend to show 842 blanks are low in the center or full of gas.

Uneven plates (Vacuum)
842 blanks
351 Vac 9 3/4 oven

Transfers 68%
3 Cooked Center
14 Lifts
1 Runout
13 Cracked Vac –

Prints – 58 good
4 Cracked
3 poor prints

Uneven Vacuum plates
351 Vac 842 – blanks 9 3/4 oven

99 – Transfer 66 good
11 Cooked Center
6 Lifts
16 Cracked Vacuum –

Prints 39 good
18 poor prints

100 in lot

Continuation of the 2900 842 100 Each:

T 351 Van 4 oven 77 OK 11 cooked 9 lifts 1 ckd Van
P 77 prints 64 OK 8 ckd 5 poor P

T = 351 V 7 oven 93/4 79 OK 9 cooked 9 ckd Van 3 lifts
P 70 OK — 1 ckd 5 Poor Prints

T 350 Van 1 oven 93/4 — 82 good 5 cooked 6 lifts 2 pull out 4 ckd Van
Prints 73 OK 9 poor prints —

Trans 351 Van 6 oven 9 3/4 75 good 12 ckd Van 11 Cooked C 2 lifts
P 68 OK . 2 ckd 5 poor pts.

T 352a Van 2-3 oven 100-93 good — 7 cooked 8 lifts 1 pull 1 burd
P 79 good 4 ckd 2 poor pts

T. 352A — oven 2 — 84 good — 7 cooked 2 lifts 1 pull 1 burd 1 ckd Va.
P 83 good 4 poor prints —

Jan 23 1914

I tested three marked records blanks made with 1000 lbs 800 lbs & 600 lbs for surface

1000 has good surface
800 has fair "
600 is rather rough —

There is a decided difference between 1000 & 600 in the surface — It looks as if we must use 1000 lbs —

24th June 1914.

Powder dried with Steam
354 Van 852 blank. made up as usual
XX3 1000 Lbs —

Uneven Varnish Plates.

7 oven 9 3/11 —

145 Transferred 78% OK
14 Cooked Cracks
7 Lifts
9 Cracked Varnish

Duplicate. Same Var Etc.

315 Transfd 83% good
31 Cooked Cracks
9 Lifts
12 Cracked Varnish —

Powder Steam heated in Vac -
355 Van 842 blank - Rub pkg Nos over 9 1/4

100 Transfd 96 good
1 Cooked Cavity
1 Left
1 Rub
1 Ckd Van

Req blank 443 - all pkg = Contents of Steam 4
355 Van Oven mixed 9 3/4 -

3653 Transfd - 74% good
304 Cooked Cavities
491 Lefts
110 Cracked Vacs

Powder Steam heat 2nd
842 - 842 -
354 Van Oven 7 9 3/4

108 Transfd 69 good
5 Cooked Cavities
7 Lefts
20 Cracked Vacs

Req - 719 blank all good blanks
7 hours mixed oven 354 Van

1060 Transfd 67 OK
159 Cooked Cavities
141 Lefts
49 Cracked Vacs

354 Van 848 blank all pkg
600 Lbs powder oven 9 3/4
1393 Transfd 78% OK
186 Cooked Cavities
56 Lefts
54 Cracked Vacs

719 ad blank ovens 3/4 mixed
354 Vars

1010 Trans'd — 52% OK
279 Cracked Centers
128 Lifts
69 Cracked Vars

853 + 854 to Beaton Vars but 855 was
Kept 15 hours

Results of Printing
83 printed —
75 OK
Cracked at Edge feed line 3
Cracked in Illesia 1
Red Centers 3
Bubble hole in feed line 1

Req Vars but Kept —
Hoffman Vis 3 min 15 sec at 70°
at 12.45 pm 24th June Count up
Ovens at 1.30 pm Vis was
4 min 28 sec This Vis was immediately
taken when set up Ovens —
Stood in Cooling Room Mat
on ice 15 hours —
Vis at End of 15 hours at 71
deg Ovens 23 min 35 seconds
Receipts —
Oven 8 — 7 hours — 842 blank

100 Trans'd — 47% OK
356 Lot Vars 60 Lifts
1 Red Cent
1 Cracked Var —

Vars 853 + 854 Dup of above but no Para — raised
Pedal to 60% Hoffman — Vis 3.05 at 70°
at 3.30 PM 24 June — Second operation at 4 pm
at 70 — 3.11 sec — 15 hours after removal
Vis at 70 was 3.12 sec —
357 Lot Vars 100 Trans'd — 93% good all uneven plates —
5 Cracked Centers
12 Lifts —

Transfer

	Even Var plates	Uneven
Cooked	8	14·8
Lefts	3	9
Ckd V	9·5	12·5

Prints –

Poor Prints	12	10·5
Cracked	3·5	2

This sheets uneven
Vacuum to load –
Uneven plating scheme as per C
Step at 1 thick –

Moore Expts - 854 Var - Uneven plates –
842 uncoated Oven 8 7 hrs
100 Trans - 830K 5
Cracked Centre 5
Lefts 12
Prints 83 printed -
6 knocks 5 colour specs 2 Rough surface 1 crack
1 Cracked 4 poor prints

Uneven plates - 854 Var Oven 8 7 hrs
100 Transfd 84 OK - 4 Cracked Centre 6 Lefts
2 Bursts 4 Cracked Var
Prints - 78 OK 1 scratch 1 cracked 4 poor prints

Reg Plates 853 - Wheat as 4 + ths 15 hours slurry
842 blanks Oven 8 7 hrs 23 min Vacuum
100 Transfd 47 OK 51 lefts 1 Pull out
1 Cracked Var
Prints 36 OK 3 cracked 4 poor prints
4 hair pressed on blanks – Moore the
the breath you use on sheeting Table.

Evidently High vacuum is
Very bad – Para which continuous
fores Var + increase Vacuum must
be abandoned to get Oven results

Steam Dried powder ~~55~~ 200 grs
oven 9 3/4

852 sp-blank old packing
145 transfd 114 OK
14 Cooked Coulin 7 Lefts 9 Cracked Var
Prints 33 OK 15 knocked 6 Cracked.

Steam Dried powder 200 grs oven 9 3/4
842 ~~552~~ new packing
100 transfd 96 good 1 Cooked Coulin
1 Left 1 Burnd 1 Cracked Vane
Prints 3 Knocks 2 Cracked
4 poor prints - 87 OK.

1% Para in Varnish that is used in the blank powder
Reg powder - Steam dried

118 Transferred 106 OK 89%

4 Cooked Coulin
6 Lefts
2 Cracked Vars

842 Blank

Oven 3 9 3/4 hours
632 Reg Vane Lot 359 B

6/29/14

842-blank Steam dried Vane powder — 854 Vane no para 6% Pauli

Transfd 100 — 91 OK
2 Cooked
4 Lefts
3 Cracked Vars

Prints. 54 OK -
1 Cracked
7 poor prints - } 8 Discard

Knocks in Mould 17 -
Knocks 5
Hair pressed in Mould 1
Mocked Tester 5

27 To be reprinted

Reg plates

T= 842 blank Steam dried 60=57 ok Trimmer 9 3/4 oven 1 left 2 mechanical

Prod. 57 — 54 ok - 2 Knocks 1 poor print,

1½ Para

T 842 - 855 - 100 Transfd 97 ok 3 Cracked wares 7 hour oven

Privat 95 79 ok - 6 Knocks 1 Cracked 5 ring shoulders 3 Cracked

842 E No 1

T - 855 — 100 Transfd 97 ok 2 cracked 1 pull out

P - 97 - 84 ok - 7 Knocks 2 hair in 4 Cracked 7 hour oven

842 — 855

T = 100 - 98 ok - 1 Cracked Cent 1 Lift. 7 hour oven

P 98 — 92 ok 3 Knox 1 Cracked

E No 1

T 842 — 852 - 100 Transfd - 98 ok - 2 pull out

P 98 — ok 80 — 6 Knox 4 white spot 1 hole 3 bad Circles

2 Cracked 2 Mould test. 9 3/4 oven

E No 1

T - 842 - 852 9/34 oven - 100 - 88 ok 2 cracked Circles

1 left. 4 pull out 5 Cracked Var - 632 - 369 Var

P - 88 - 81 ok - 6 Knox 1 white spot.

E No 1 Reg plates

T - 842 - 857 = 9 3/4 oven 100 - 90 ok 1 left 8 - broke pull A

P 90 - 71 ok 2 Knox 1 scratched 3 Cracked 4 poor pi

E No 1

T - 842 - 857 - 9 3/4 - 100 - 91 ok 3 Cracked 1 left

2 pull out 1 Cracked wares 2 Ckd Var 632 369

P - 91 — 77 ok 6 white spots — 3 bad Circles 4 Ckd

1 poor pr -

5 Expt 6 -

T - 842 - 852 7 hour Expt 6 — 100 - 96 ok

Left 2 Cracked V 2 -

P = 96 — 81 ok 5 Knox 5 mould 4 unmade Circles

Reg plates

T 842 - 857 9 3/4 - 100 - 95 ok 2 Cracked

1 pull out 2 Cracked wares

P = 95 — 88 ok 1 white spot 3 hair in 3 Cracked

E No 1 uneven plates -

T 842 - 852 9 3/4 — 101 — 88 ok — 1 Cracked

3 left 5 pull out 1 Ckd wares 2 Ckd Var

1 mechanical

P = 88 — 78 ok 1 hole 1 white spot 6 mould dag

2 to mould wares -

all new 842 blankets — OK 50% Reprint — all E1 hand pulls

	OK Transfr	OK Print	Ok for Reprint	OK 50% Reprint ↓	
855 1% Paraam Blanket	97	79	12	85	
	94	84	9	89	
	98	92	3	94	
	97.3	85		89.3	
852 Spt 7	98	80	6	83	Steam Dried Reg Wood pulp Vers
	88	81	6	84	
	96	81	14	88	
Uniform Blanket	84	78	8	82	
	92.5	80		84.2	
857	90	41	3	73	Steam Dried 185 wind outlet 205 Reg wood pulp Vers
	91	77	0	77	
	95	88	3	89	
	92	79		79.6	

Printing

	Cracked	Cook C	Poor P	White Sp
855	3			
	4			
	1			
852	2	3		4
				1
				1
857	3		4	
	4	3		6
	3			1

Transferring

	Ckdwarp	Cracked	Pullout	Cooked	Left	
855	3	—	—	—	—	300
"	—	1	1	1	1	
"	—	—	1	2		
	3	1	2	3	1	
852	—	—	2	—	—	400
	—	2	4	—	1	
	—	—	—	2	2	
	1	2	5	1	3	
	1	4	11	3	6	
857	—	—	8	—	1	300
	1	2	2	3	1	
	2	—	1	2	—	
	3	2	11	5	2	

100 Lot Ends

		T	PT	RP	
9 Lot 248	842 blank	93	80	—	
9¾ 249	"	93	78	15	
" 250	"	94	66	23	
" 251		94	88	3	
" 252	"	96	62	24	
" 253	"	90	83	7	
" 254	"	95	90	5	
" 255	"	96	76	17	
7 256	"	96 854	89 712	1	
9¾ 257	"	87	70	15	
" 258	"	88	70	14	
" 259	"	89	68*	4	12 Lots
" 260	"	93	71	4	
" 261	" 97	88	74	11	
" 262	"	91	84	6	
" 263	"	93	84	3	
" 264		98	77	3	
" 265		96	87	1	
" 266		97 920	87 792	4	
" 267		100	98		
" 268		100	79	12	
" 269		94	81	6	
7 270		88	168	0	
9¾ 271		88	74	1	
" 272		97	82	2	
7 273		87	71	4	
9¾ 274		91	87	3	
7 275		79 984	6 802	6	
9¾ 276		93	43	50	

Transfers 91.93% good

Prints 76.2.

If 53% of Reprints is attained,

then Prints 80% good

to Shipping Dept,

Lifts	80
Pullouts	18
Cracked Wave	19
Cracked Vermel	70
Mechanical	13
Birds	15
Cracked Ceiling	26

Papers all dated 7/9/14

67 Lots of 100 Each

Averaged 94.2 good Transfers

& without any allowed for Reprint

gives 75.8 good prints+

passed as OK for shipping

by Testers —

There was 391 reprintable discard

assuming 50% good, or 196 -

this gives 78.8 Good

Prints,

Evidently 75% is

good safe average

Just tried Experiment on Ortho Cereal for Black Vaccinate with 6% 6/4 — Virus Control

Transfer

OK 9
Contr 2
Bad 1
12

Prints
All printed (9) OK

This shows we can used Ortho Cereal with ½ To 8% 6/4 in place of Peptone

Also used mixture of
2/3 phenol recon 5% 6/4
1/3 Common Room —
Transfers with Req 632 Van Nasang phage in —

100 —
92 OK —

Dup test with 854 Van colitech to Req Van with Para left out & Peptone increased from 4 To 6% 2/3 chemical 1/3 Tween
100 Transferred
75 OK

Dup of the 854 Van test ½ Room ½ phenol recon
100 Transferred
57 OK —

Para assay repeating to get growth curve

July 2 1914 —

Experiments with Metapara Cresol from Bayway Chem Co

872 Vanmeter

1200 MP Crude cream SR
34 gm. phenol
94.3 " 6/4 —
6% Pentin (6 used with steam)

+ 873 Vanmeter —

Cold Reg Except used MP Cresol & Paraphenylenediamine —

Cloud + baked = all Cracked bad, Too much Paraphenylenediamine 6/4 Condensed too much Wants lean 6/4 —
leave flecks + Very brittle stuff —

Tried MP Cresol again. 6 7 8 9 + 10% 6/4 — Work + workout Para, —

225 Take in oven dont Condense Enough — Worn transformed. 15 min hot at 100 C by accompident They were hard nearly as Tan as Reg —

I think MP Cresol can be made to work on Veneer — it works OK in powder —

Ortho Cresol with 6 Pentin 2 para + Reg Amount 6/4 dont harden in oven & Even when transformed it melts + runs all away There may be a mistake in 6/4 but I dont know how to put it in —

We find that Otto Cresol (German) dont knocked with 6/4 in transforming, melts + runs off -

Meta Para Cresol from Bayway Chem Co, Condenses to a Resin

But it reacts Curious —

35% formaldehyde will plasticize wood or resin — + that is soft + Clear + dehydrated + it works good in powder blanks — But 40 45 & 50 % formaldehyde dont give any greater yield 75% but goes off — I Heat only 35% or perhaps 30% formaldehyde Can be used —

40 of WP gives 30 of Resin — using 35% formaldehyde

Cooling 10 Cents Lb for resin Even if the Excess Coming down in dehydrater isnt any good

Varnish for plates —

. With 4% Penta + 1/10% Para the bubbles are too much

With 6% Penta + 1/10% Para There is very few bubbles —

~~With 5% Penta + 1% Para~~

With 5% Penta + 1% Para

It makes a fine flowing Varnish but yet, dont thicken but little in 20 hours — do ok using 7.9% 6/4 —

I now make New Standard Varnish —

6% Penta

8% Para — 8/10 TH %

8% 6/4 —

Benzaldehyde acid. Neutralize by
Phenolate. Gives free phenol —
Benzene + free SO_2 —
Phenol obtained off = Then Concentrated
+ Treated Centrifuge and MgO +
Centrifuge — 60 cells Liquor
Na_2SO_4

B Sulphuric acid — Neutralizes — Chemical or Inorganic Sulf Na — SO_2 present —

2000 —

12.

2000
41
200
800
230
315
58
230
220
8

41

$320 lbs

B [illegible] acid —

② Sulphite Na —

Benzene Sulfonate Na +
SO_2

Na Cl.

23 —
18
184
184
4

23
18
41

35
41
6
7
410
350
60
3

54
2
108 —

1/2 =

5

65 C 13
50 C 10
30 , 6 —
25 = 5 —

5 | 65 (
13

44
12
8
44
32
12
360
36
30

50

16, ton of soda

3.85

2.6 — 350

1450 —

145
7
7.24

213
16
27
13
8
2
0
0
34
2
35

15
30

1450 | 3824 (2.64
2900
924
870
54

421
370
20
3
1

Notebook Series -- Notebooks by Edison
Notebook, N-14-06-09

This notebook is a continuation of N-13-08-25.2. It was used by Edison and Peter C. Christensen during the period June 1914-February 1915 for a sequence of numbered "tracking tests" to improve the quality of the "white master" records. Preceding the tests are entries by Christiansen alone [not selected] listing various experimental preparations of wax compounds and phenol resins. The notes indicate that an employee named Miller (probably Joseph Miller) worked with Edison. The spine is labeled "Testing #2." The pages are unnumbered. Approximately 50 pages have been used.

402 Drags a little
Temperature 92 Tabs

Better than the other 402 has a very small drag due probably to high temp 92°
Surface not as good as 651 —
Coolers Chip-shade Elec
651 none —

About like 402 chilled
little worse drag —

Tracking Test #101

#655 - Very good almost - perfect, surface of chunk is better than 651

656 - Don't think it — good surface as 655 -

657 - Drags little -

Drags Bad -

659 - About perfect, just worse than best surface
651 - 84° Falls Condition chips -

660 - Shade of Drag -

Tracking Test #102

661 Not homogenous - ingredients don't mix -

662 - Just little poorer surface than 651 but else good - no drag -

663 - About perfect no Elec condition Chip. fine surface only broke of standing ball -

664 Drags -

665 - OK perfect, ordinary depth Tracking chips is brown paint + perfectly Conditioned Even way below knife Chips are 1/2" Long

Tracking Test | 103

666. good but not quite as good surface as 665 but consistent Clip perfect Like 665 —

667 — about same as 663. slide more because of Ball —

668 — Just same as 665 — good

669 — Same as 665 good

670 not quite as good as 665

Tracking Test | 104

671 not good surface as 665

672 Very Electrical —

673 not so good ~~surface~~ as 665 —

674 surface not good —

675 Very Very Electrical

676 [illegible] as 675 —

Tracking Test 105

(illegible). Some Electrical - surface fogged -

(illegible). Dragged - fogged Electrical -

Dragged & fogged Electrical

(illegible) Dragged & fogged Elec -

(illegible) Bad surface - chip not continuous, thunk at shank Elec

687 Elec surface not very good

Note -

Tracking Test 106

683 · all short chips - fogged. Curious - scarcely any chatter marks goes to knife w some Elec

684 Bad fog - No chatter Mks - Chip 1/16 long, w some Elec

685 Very Bad fog -

686 Bad fog

687 fogged - Drags

688 Very Bad fog

689 fogged

690 fogged

Tracking Test 107

Muddy tinge of fog

Very good - Continuous Chip, not Elec - This acts is nearly just as good as 651 - ~~Foggo - Considerable~~

~~Foggo Considerable~~

- Perfect, absolutely Non Elec

Drags - Too high temps for these Conditions -

Drags a little, temps to high 95° -

Real quite as fine surface as 693 - deep tracking Chips not very long - - as this long Chip has slightly attenuated tip backend -

Tracking Test 108

Matted - some drag temp 76° -

698 Poor grain - not Elec, -

699 - Better surface than 698 - matted grain - not Elec - pretty good cut, probably can be made better -

700 Much better than 699 - Continuous transparent Chip rather deep cut, probably wants more Carnauba -

705 - good = VERY

Tracking Test | 109

706 Surface not homogenous — Chips bunch-clump not Elec

707 Chips bunch-clump Surface not good,

708 Not good surface

709 Perfect - Very fine grind Chatter marks clean cut like rag way - Not Elec Chips bunch + twine around — where ball goes makes surface shade bad but good surface Very fine

Tracking Test | 110

710 Better than 709 - ball has no effect, Chip bunches —

711 About same as 710 —

Temp 76° Faleu

712 Surface not very fine, goes to knife no amount of chips Chips Spiral + Short - Not Very good slight Elec

713 a little better than 712. Light chip Continuous, heavier spirals Blunt + Shade Elec —

714 about same as 713 —

Tracking Test 111

715 Smelled + Dragged 4q —

716 Dragged 6 ad — Dont like

718 Drags some — Dont like

719 — not quite Condem a slight drag surface not very good —

720 Some drag surface not form

721 Drags — short spiral Chips

722 Drags "

723 Drags "

724 Very poor surface

Tracking Test 112

725 Very poor surface Electric

726 Taller surface Drags some slightly Electric

727 Not good surface slightly Electric

728 Rough surface — deep Chip Formation — Drags slightly —

729 fair surf — Drags little —

730 Surface not good — nearly condem Straight Not Curved Chip short Elec —

Tracking Test | 113

731 Nearly Continuous chip not spiraled surface not fine enough —

732 Bad surface — all needle & chisel Wax composed of two or more things — Need to be separated to get any results —

Temp 80 Feb

733. Drags some — not good surface spiral chips & granules some Electrical

Tracking Test | 114

734 Coarse surface NG —

735 Shade of Drag surface not fine enough — slightly Elec spiral chips — broken Knife Edge — when below Neg Knife edge

736 Drags badly. Surface not fine — Spiral chips —

737 Very fine surface NG

738 Not Elec straight chip — Rough poor surface —

739 good straight chip no spiral surface not fine —

Tracking Test | 115

740 Very Coarse surface NG
741 " " "
742 " " "
743 Surface not good Coarse
744 " " "
745 Drags bad surface
746 Horrible surface
747 " " Drags
748 " "
749 Better but too Coarse surface

Tracking Test | 116

750 Bad mixture Rough —
751 Extremely bad mixture NG
752 Very Rough much better than 751 —
753 Rough like 752.
754 Fair but not quite fine enough grain - smuts a little & not very sharp - Chatters irregular
755 Slightly better than 754
756 Drags —
757 Dont Drag grain not quite fine enough - Like 754 —

Tracking Test | 117

758 VERY GOOD no amnt or drag — full space — get thru out + will be fine — 2 mills

759 Same as 558 but much harder chips short not continuous or as long as 758 — Has same spaces —

760 - like 759 - chips short when deep — if short chips don't hurt it OK but think it will be found too hard + Chips stick too much to reamer.

Tracking Test | 118

761 Drags - Curious — powdery Chips - goes to knife - clearly defined Chatter —

Better make 2 cyl. — for Miller —

763 Not so good as 761

764 Good - clearly defined Chatter - Chips break up — stick to cylinder 2 mills

Tracking Test 119

770 - OK. Condemn chip on light cut short chip on heavy cut - not Elec fine grain - 2 Miller

771 Very fine - Condemn chip light or deep cracking - Chatter like Reg - not Elec - 2 Miller

772 About same as 771

773 Light Cut Condemns - deep cracking powdery. Elec Cylinder - Recoatable Too hard Otherwise OK fine surface, no burnt or Drag Chatter Like Reg Therm 68

Tracking Test 120

774 Heller Chem 773 Condemns Chip to Knife Edge - Surface fine grain Pretty good - 2 Miller

775 Too hard,

776 goes to knife Condemns Chip - GOOD fine grain no burnt or Drag Therm 68 2 Miller

777 Little too hard, chips break at knife -

Tracking Test 121

778 chips Coulmn to Knife. Pretty good grain fine. Very good — 2 for Muller

779

780 — goes to Knife Coulmn Very fine grain — Therm 68 Think it could be great 75 or 80 Slender Coo hard nose Chatter Coke Ring GOOD 24 Mar

781 Best for coulmn chip yet 68 False Coulmn beyond Knife — fine grain surface VERY GOOD 2 for Muller

Tracking Test 122

782 all frosted NG —

783 frosted NG —

784 little raft, a slight blush — no drag or count deep knife Coulmn chip —

785 — NG — bloom on it.

786 ~~Star~~ Pretty good — nick 2 cylinders for Muller — surface not Extra fine

Tracking Test | 123

787 like 786 –

788 Good. Surface not very fine – 2 for Muller

789 Very good – 2 for Muller –

790 Good, too hard, Very fine surface + Cluster wall defined + like Requeen 2 for Muller –

791 Too hard can scarcely go to knife – Clusps break up –

Tracking Test | 124

792 Not so hard as 791 – Contains clusp to knife 2 for Muller –

793 – good – 2 for Muller – good grain

794 good 2 for Muller – good grain

795 – Surface not very good = Contains clusp still to experience Thank the Elec

796 Electrical Test Very good. 2 Muller

797 fair but so little Elec

Tracking Test | 125

799 Surface rq - Rollers -

798 Electrical

800 Electric not very fine grain
clumps -

801 Some Elec - clumps -

802 Some Elec not very fine grain

803 " "

804 " "

805 " "

Tracking Test | 126

821 - Ok but bad mix/sm + surface
not Elec - Knufs OK

822 Bad Mix - all comes off
in powder goes to knufs -

825 - Bad mix + surface - powder
Cut -

826 Bad mix + surface - powdery Cut

829 Drags - Bad mix + surface

Tracking Test | 127

871 Works like Reg but appears harder surface not soft.

864 - rafia surface not quite as good as reg cobalt wax

863 surface NG -

860 Worst on Record so far

858 NG -

882 — Can't hear anything with Listening Leica except when just beyond knife edge 40/1000 knife - its very fine chips always around, no powdery chips

Tracking Test | 128

900 Very good different from all others Chatter marks Very fine finest yet, goes to knife edge so sharp Can't see it, Some fine chips chip

901 To hard Chips beyond knife edge Very fine hard to see if it short chips Very few chatter mark never as good as 900 surface blanked,

Tracking Test | 129

693 - wax #o (Made Feb 16-1915)

Tept of wax 296° F
" " wax 93-
Started with mould cold except center piece was hot ring cold (wax runs) after 16 min lifts bottom joint and then put steam in ring then back top joint —

by shaving it sound very rough wax was very unclean

Tracking Test | 130

709 - was made same as #693
Made Feb 23- 15, (3-)
1 was shaved 25 of Feb
sent to Mr Miller for shaving 26-
he says it is hard to do [illegible]

Notebook Series -- Notebooks by Edison
Notebook, N-14-06-13.2

This notebook was used by Edison and an unidentified employee during June 1914. It contains notes on the process of forming disc record blanks. Entries by the unidentified employee at the beginning of the book provide a daily record of observations from June 3 to June 26 concerning "new process Blank machines" for the production of disc record blanks. The daily record includes information about problems with machines, the number of blanks produced, and the number of men working on various parts of the production process. The following entries, which are by Edison, pertain to experiments made with one of the loading and pressing machines to determine how to apply even pressure on the powder (used to form blanks) with a rubber plunger. Included are notes on the timing, the pressure applied, and changes in various equipment, such as scrapers and planers. There are also notes on problems with the powder and the varnishes used to coat the blanks. At the end of the book are several pages of drawings and rough calculations that relate mainly to the layout of a manufacturing department for the production of disc record blanks. The front cover is labeled "Disc Record." The pages are unnumbered. Approximately 50 pages have been used.

New Process Blotter

4

SH 2

6/3 -14

Starting of new process Blanks machines

hammer strike 94 to the min.
700 lbs pressure on hydraulick press
7½ in ram

Note taken of steel color used in
first two operations clinging
to die with rubber pad in press

6/5 -14

5 rounds turned out on the
old schedule #10
10 min on 1000 lbs hydraulick press
100 lbs steam and Cool

3 rounds turned out on the
Edison Double XX #3
5 min on contact steam on full
3 " " 1000 lbs hydraulick
steam on full then Cool
under this schedule dial hand
held on 1000 lbs continuely
throug both steam and cooling

6/8-14

packing schedule changed from 1/2 min to 1 min to avoid dark spots.
note taken of change of the above schedule for the better we geting a more conform solve.

6/9 -14

Things in general running OK today.
Total number of blanks turned out today two men 106 Day men
" " 126 Night "

June 10-14

Everything running OK
Total number of blanks turned out today Two men 120 Day men
132 Night "

6/11 -14

note taken of actual time consumed from when the mold is taken filled packed rammed scraped capped ready for large press

time consumed in filling and packing - - 1 min 1/4
" " " ramming in press - - 3/4 min
" " " scraping on table 1 min. 20 sec
one 1/2 revolution of table - - -
time consumed in caping - - - - 1/2 min

Lot #5 #6 #7 shut up today

Lot #8 run on the Edison double x 3 record with the hydraulick open after leaving the 5 min contact note taken of indicator on hydraulick rising to 1150 lbs at time then droping back to 1000

Total number of blanks turned out today 192
two men on new process machines
one press man

6/11-14
night work
Baring a few oil spots on blanks
every thing O.K.
Total number of blanks turned
out by night men 192
two men on new process machine
one press man

6/12-14
day work
Two of packing machine
not running this A.M. on
account of bowder bearing
lodged in oleg wheels &
motor needs taking.
Total number of blanks turned out
by 2 men loading 1 extracting
and 1 fireman 214
change in powder on the last
100 turned out 44 being of
powder marked XX 3A this
powder to continue until
note taken of change
powder changed to regular
powder

6/12-14
night work
Things running along smoothly
note taken of small specks
of brass in 3 of the blanks.
the above mentioned fault
traced to a small brass
headed hamer that the men
wear using to tap down
pins in molds before filling
the same with powder
the above mentioned hamer discarded
at once
Total number of blanks turned out
by two men 136

6/13 - 14

Things running along very
nicely today
note taken of 8 or 9 blankets
having small grains of
brass in them
traced to brass loading
coilers
Total number of blankets
turned out today 276
2 men on new process.
machines one man extracting
one press man

6/15 - 14

change from 2 single valves to one free way valve
Considerable trouble this morning
with belt contacting blades on
turn table.
all so hydraulick pressure below
us quite some to day.

Towards noon things adjusted themselves
again
Total number of blankets turned
out today 288
2 men on machines one man
running press one extractor and
one press man
on account of change of valves in packing
press time in press duration reduced 1½ min

6/15 - 14

Trouble with belt contacting blades
on turn table during night
Total number of blankets turned
out bye nights crew 240

2 men on packing machines one
man caping one man extracting
one press man
quite some trouble with hydraulick
pressure tonight

6/16-14

Thing a running very nicely today
hydrolick pressure went down once today but did not seem to have effected our blanks in press
Total number of blanks turned out today by 3 men on new probst machine one extractor and one press man
Total 396

6/16-14

Machine running nicely
Total number of blanks turned out by 3 men on new process machines one extractor one pressman one 396

6/16-14

Day crew 396 Blanks
Night " 396 "

6/18-14

change made in driving wheels controling main belt that controls blades on turn table Hydrolick went down once this A.M. but did little harm to our work in large presses
note taken of change of wheels on main shaft to reduce speed of blades on turn table
note taken of blades running very irregular in scraping off powder on molds on turn table
Two more men added to crew now at work on machines at 4 P.M. crew as it now stands 2 loaders one caper one man on small press one extractor one powder man and one press man
Total turnout
480 Blanks

6/18 - 14

Barring previous mention faults every thing running OK. crew increased by two men
Total output 480 Blanks

6/19 - 14 Day crew No 2
Note take of change made in running of large presses
starting from Lot #52 the scedule to run 5 min. cont 3 min. 1000 lbs the hydrolick to be left open and load on one previous Lot. one bulck one hydrolick at 1000 lbs cent

Other wise thing's running nicely
Total number of blanks turned out 684

6/19 - 14
Night crew No 1
note taken of hamers on Two of packing machines varied
Total number of blanks turned out tonight by 3 packers 2 capers one foreman 724

6/20 - 14
Day work No 2 crew
Hamers on above mentioned machines fixed things running smothly
Total number of blanks turned out today 746

6/20 - 14
Night work No 1 crew
Everything running smothly
Total number of blanks turned out
60 rounds 702

6/22-14

note taken of rubber pad becoming loose in small press removed the same 6 30 PM and replaced a new one in place

Crew increased to 4 loaders

3 men carring 2 running small press one extractor

one powder man 2 men on large presses one man distributing molds and unloading large presses

Total turned out today.

1036 Blanks

6/22-14

Night shift

Every thing running O.K.

Total out put of the 12 by 12 crew

840

6/23-14

all but one of loading machines stuck this A.M. fault. powder becoming lodged in agitator and [illegible] feeding table

Total number turned out today

1152 Blanks

6/23

Every thing working OK tonight

Total output of blankets tonight 852

6/24-14

All working machines clogged this A.M. Fault powder flowing clogged in bags which holds in the machine working table

Note taken of change made in scale controlling powder chute

Small block wood made to be used in filling scoops with powder for new process machines

This change will be noticed starting at Lot #17. - 842 Blankets 845 Powder

Note taken of fan extractor added to new process machine outfit

Total output of blankets today 1128

6/24 - 14

Night crew

Every thing running OK.

Total output of blankets 1080

6/26 - 14

Things running very smoothly T-day

Total out put today 1348 Blankets

6/26-17

note table of hydraulic pressure going down on 4 different occasion this time all held 15 min. but hydraulic pressure very poor this afternoon only 2 [illegible] dropping as low as 400 lbs.

Total number of blanks turned out today 1152

6/27-17

This working O.K. today

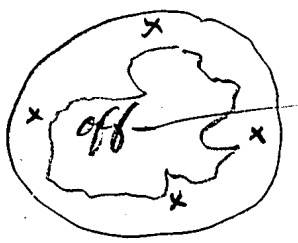
Total out put of blanks

June 29 1914

Experiments on Unit No 1
8 Loaders 4 magnets one
press 4 planers

Expmt to make even pressure
of powder by rubber plunger +
diminish the lifting of the
surface when rubber leaves
powder —

Press has 7/8 inch ram —
usually we use 700 lbs
pressure. This makes lifts
some of the lifts peel off
main body below the planing
line all loaders left
more than edge, Tried 1000
lbs + let it up very slow did
no good, some of lifts went
way below planing off line



+ below
x x Etc no lifts

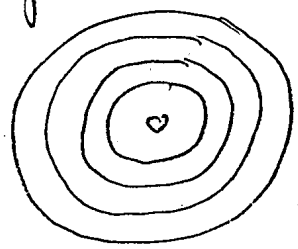
It looks as if Center got very little pressure and trouble was in original loading of the powder too much around edges.

We tried one at 700 lbs laying tin foil on powder & then pressing with the Rubber. This worked OK & powder did not stick to foil but the lefts were there just the same but not so thick putting hand on foil could feel the left as if air was under

We are now running the scraper on packing machine to load in 1/2 a turn instead of one men so powder will not pack so much around edges — no tin foil —

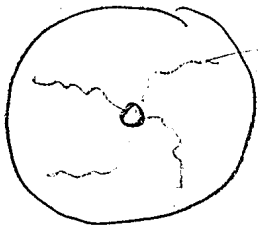
After shaving it seemed more

If its shrinking of the Rubber Cored put rubber on in rings.



Necessarily there would be spaces but am afraid they would get full of powder

Even than the 1 min loading notices on all this



think ½ min is better than 1 minute, but too much lifts —

One packed in 20 seconds appears better than 30 sec

We now try 14 seconds, This seems thin lifts —

Our old 4 leaf planer planed it off good

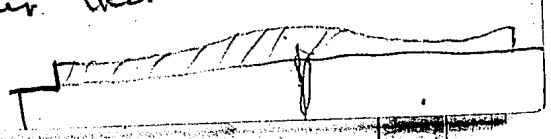
It looks as if old 4 leaf planer at 60 Rev was best

the 8 leafs makes too much air + does something bad shaves come too aflap —

We now change the planer on machine blades to 4 leafs instead of 8 leafs + run 60 — to see how it planes off —

The 4 leaf is much better its going 60 + old one 40, Think 40 Revolution of the planeing scraper 4 leaf is just about Right —

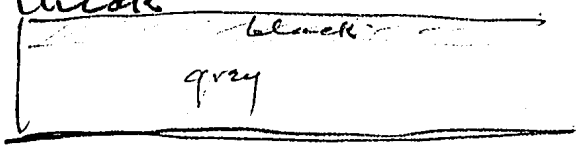
I noticed mine let rubber pressure off too quick + all lifts pulled up in Center Rear



By Keller rubber off slowly
dont left as much —

Tried 20 sec loading + 5000 grams no better I think it not so good as hot + pulls out below the ring

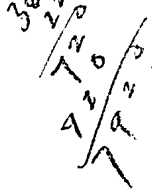
I notice that when ready for Big final press its one thick



What Causes the black

We now make one of 20 sec loading 475 grms + lay one of the old 1/8 rubbers on powder + then put in big rubber press 700 lbs —

1-1



This seems good, more room after planing ~~after planing~~ by finger test There was one or 2 sawdust pull out below ring & fingers fell one or 2/8 of a plane but generally it was taller

We duplicate this with Extra rubber 1/8 thick but put on planer & bring up & let off quick—

Rev of table 2 min 50 seconds
Can put 4 on say 4 in 3 min.
This would be 16 for the
4 Tables in 3 min or
5 per min for the whole
Unit. or maximum of 6600
for 22 hours

The planer Scraper revolves 60 Rev -

With 1/4 rub put on + pressed wkd up + down quick as Could look 20 Sec

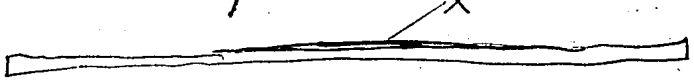
On working quick in process with flat rubber Taking off rubber + then breaking up flakes of the lifts by flat of both hands it planes off good — We must break these flakes up as the planer blades but flakes + break out places below ring where when flakes broken up by flat of hand only powder is taken off by planer + walking breaks below ring + we get smooth surface

9 timed press with press man & one on opposite side they did 10 in 7 minutes but they took off & put on extra rubber & patted with both hands the powder after pressing—

Press man should & may 2 per men & of 2 men on side extra to put & take to. planer table Can do 3 a minute

---

Dence Centers are very hot possibly we can put a piece of rubber on the 1/8 thick



& press center harder or on plunger w press

June 30. 1 am

What is needed is very smooth & very flat 1/8 rubber on packer with the Reg thick rubber on plunger of press

Edison No 1

The lot we are now running there is 20 sec pkg— 1/8 extra rubber on powder then press with Rubber plunger put pressure on & off fast as possible & break up flake by both hands pressing down—

Planer 60 Rev Table 1 Rev in 2 min 50 sec Will transfer 4 pieces 12 at time, they look good, some are a little dark around edge on top

Edison No 1 - Transfer

OK IIII II

Left Ckd outside near edge instead inside II

Left Ckd III

only 58%

But the powder is heated by Water old way & The Var is Reg Pentex Var —

2nd Lot

OK IIII I

Left Ckd IIII 50%

Var Cracked II

Something wrong with the Powder gas not out of it

Will try & get some steam heated powder —

& try it — Loading same way & try & use same Lot of Varnish plates —

June 30 1914

and scarcely any one bottom bottom gray all over & very light gray in Center —

test on left hand shows either that this way of loading is bad or the powder is bad having only been heated in Vac Dryer —

The Varnish plates we will use is Lot 362 a 632 Var

The Powder is the Trouble We just made 12 blanks with powder steam dried in Vac & the blanks showed Perfectly Even No black around edge Now

June 30 1914

We will see how they transfer, if good, it will prove that its the powder & that it must be heated by steam to Condense the Varnish in powder so it will act as a Lubricant & pack even

Here are the Transfers from the steam dried powder 12 Transfers

OK IIII IIII I XX

1 Comd- 100%

This is 1st Real proof that we must Condense our powder & therefore must use steam &

Printed
OK. IIII IIII II 100%

June 30 1914

Be sure we get right temp & time —
We now use 3½ hours, & think
we must be sure acc pressure
is right & to get Marquis
Keep it ½ hour longer in
Vac Dryer under steam
heat at proper pressure

2nd Lot Trimmers Same as XX
on back page

OK |||| ||||

Comet 1
Small left Cracked 1

These would have been OK but
for Careless packing —

4/1400/350/3/0 5 0

1400 / 7 / 200

42

Hoffman Vac Dryers

gives 1200 blanks in 4 hours per round — 6 Rounds in 24 hours or 7200 blanks 24 hours

3 Vac Dryers 21600 —

no losses of powder

Digesters, 1½ days 1800 lbs of Resin per Digester

3 Digesters 5400 —

Another Digester could be in Complete work —

187 lbs Resin for each 1200 blanks —

330 lbs resin in 350 Transfers (700 plates)

Edison X-01 - with Steam Dried Powder. using Reg Varnish without Para + gave on 42 OK out of 47 transferred This Varnish Keeps Constant Viscosity & does not change in 15 hours in the room —

The Viscosity in above Expt was too low only 2 min 47 sec thru, a mistake of Hoffman men, it flowed like Water & Motor thought from looking at plates that they would be poor, Centers thru thin

Another test of E X-01 with Varnish Reg without Para but 2 extra Penta Cycles 91% OK Transfers + 100 printed —

2 Cooled Coolers
6 Lifts
1 Corroded Van

This shows, as far as transfers Para not necessary

4	Loaders	800
2	press	400
4	Carriers from press	800
4	Magnet	800
2	Extractors	400
2	Truck	400
2	Extra	400
1/2	foreman	200
1/2	Inspect	200
		44.00

8

2400 | 44000 (18 352
24 00
20000
19200
800

2400 | 52 00 (21.65
48 00
4000
24 00
16000
1600

24-

2.165
3800
59.65

6.C

200 | 300 (2000 .66
1800
1000

3.6
2.2
5.80

100 — 5.80

T— 86 ok — 6.74 per 100

Prod 92 ok — 853 " 100

79 left —

Test 80% — 63 Left. 13.4 100

86 | 5.80 (.7 4 37 Returns

516

640

602

38

3.8 12.

79

80

632

86

86

516

79 | 674 (853 6 8 8

632

420

395

25

86 37

92 38

174 296

774 111

791 2 140.6

63 | 853 (13.5

63

223

189

34

13.40

140

120

12 Cents — 6 cents

20 Labor

32

34.5

343

40

380

34.5

13.8

48.3

8000 | 160000 (

62.5

48.3

14.2

140

8

1120

225000 / 675000 = 3

2

3.47
3.47
6.94

9-

3.47
3.00
6.47

7.74 × 75 = 387 + 5418 = 580.5

13.4 × 39 = 134 + 402 = 16.4

360 − 226 = 134

580 − 554 = 26

6.75 − 4.5 = 2.25

7.74 × 580 = 5940 + 1740 + 2.00 = 133

16.4 − 2.00 − 364 = 50.96

36.4 × 40 = 145.6 + 3640 = 50.96

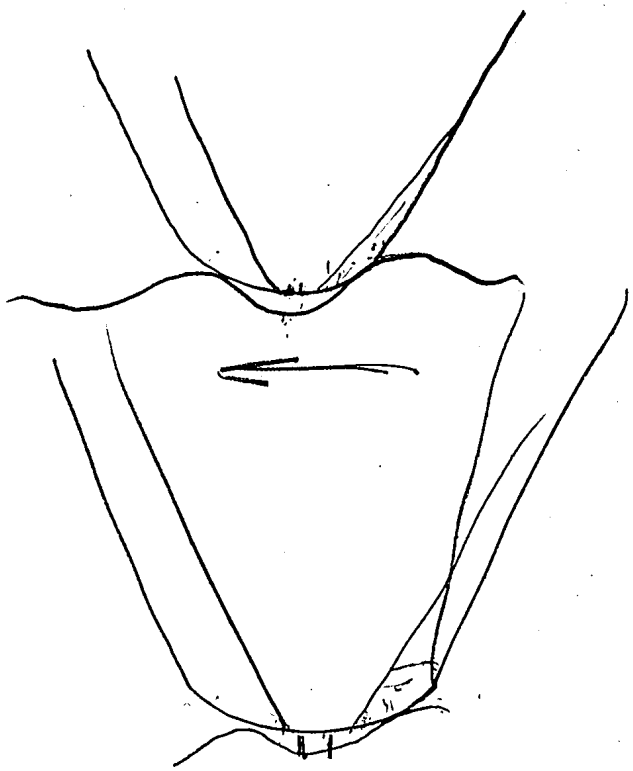
36.4 × 13 = 364 + 364 = 473.2

8000 | 160000 | 20

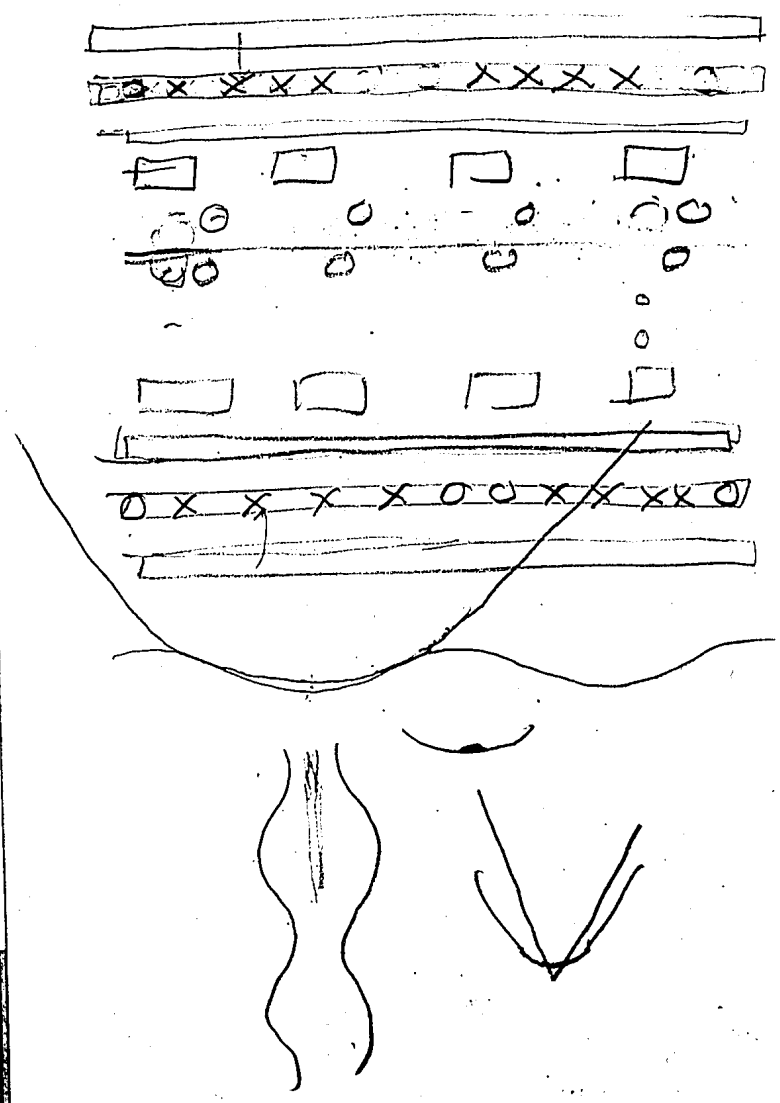
86 × 86 = 516 + 6880 = 7396

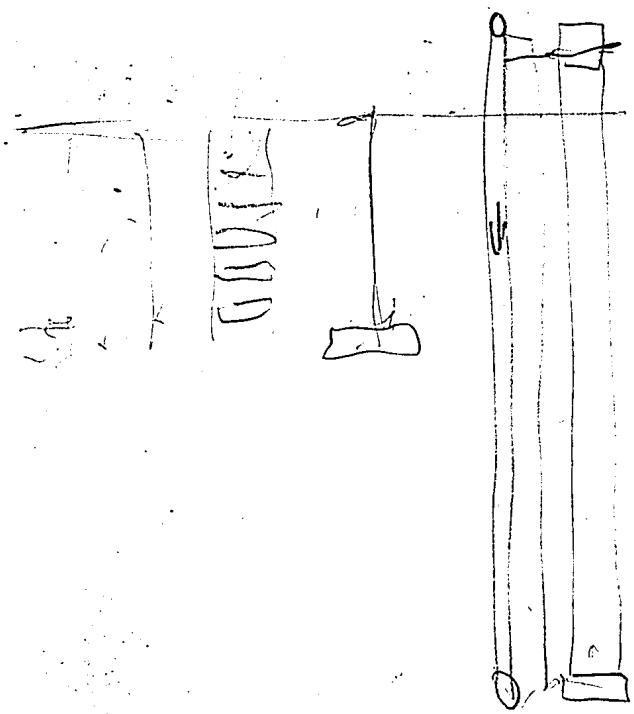
364 × 14 = 1456 + 3640 = 5096

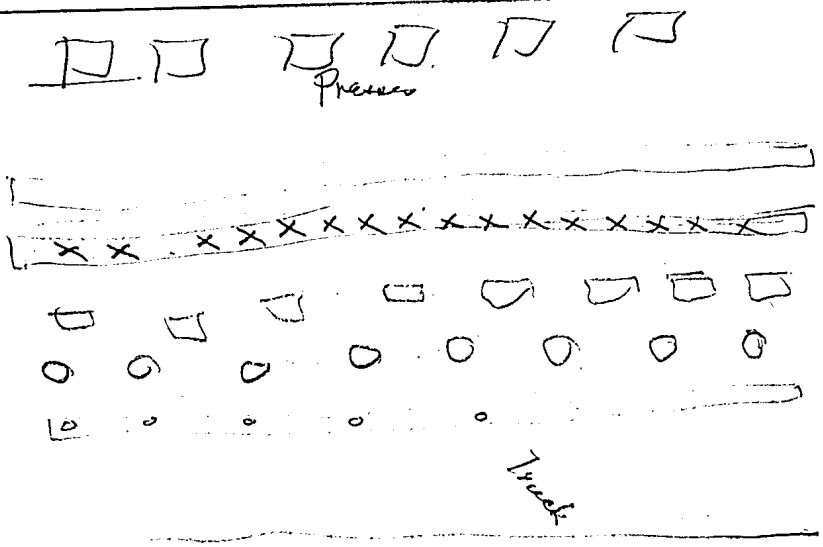
364 × 20 = 7280

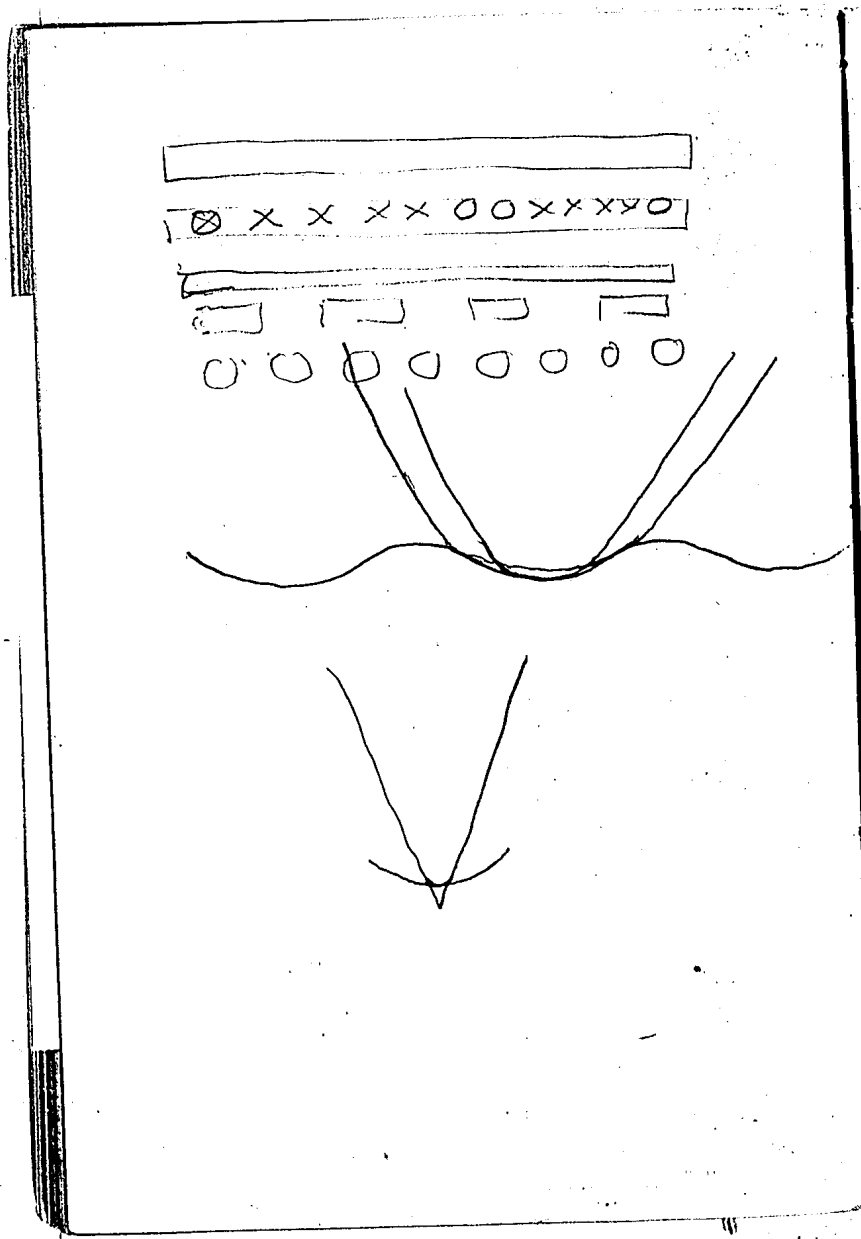


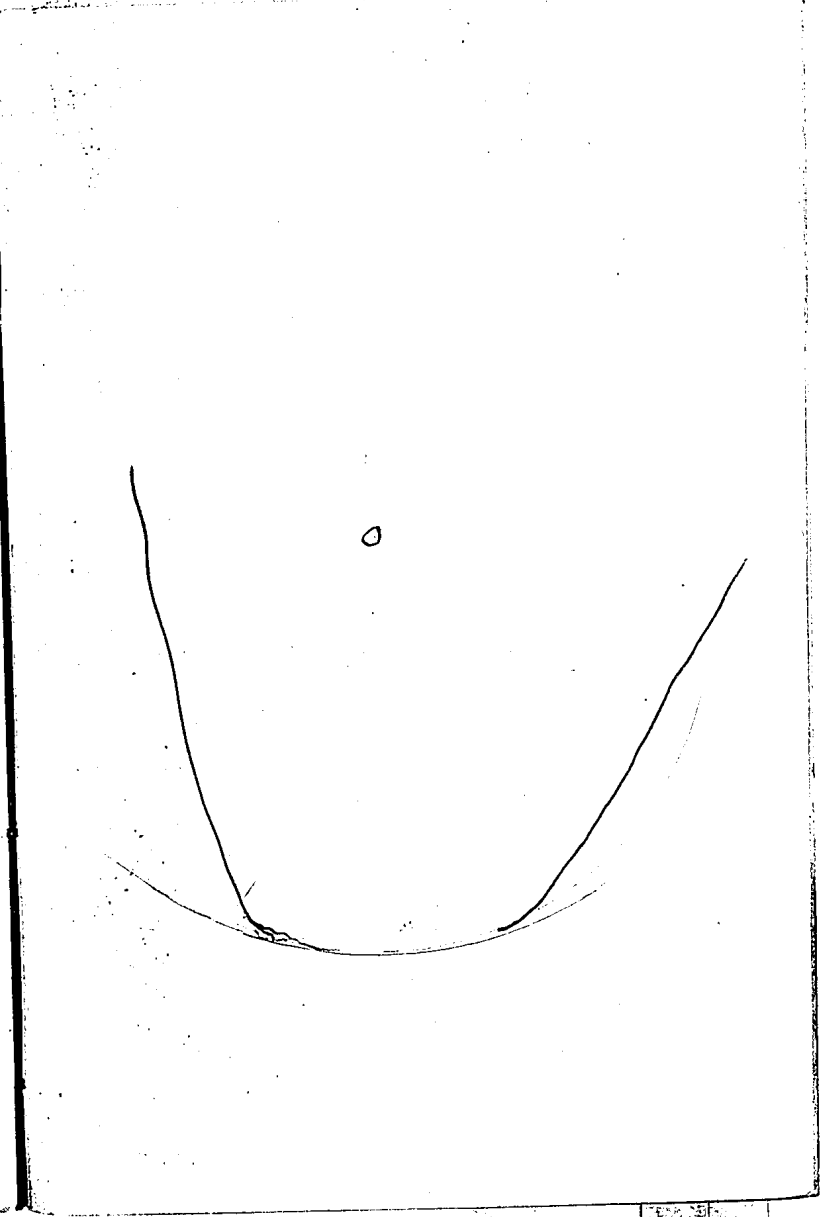
48"
48"
20
12"
15"
2"
250
500

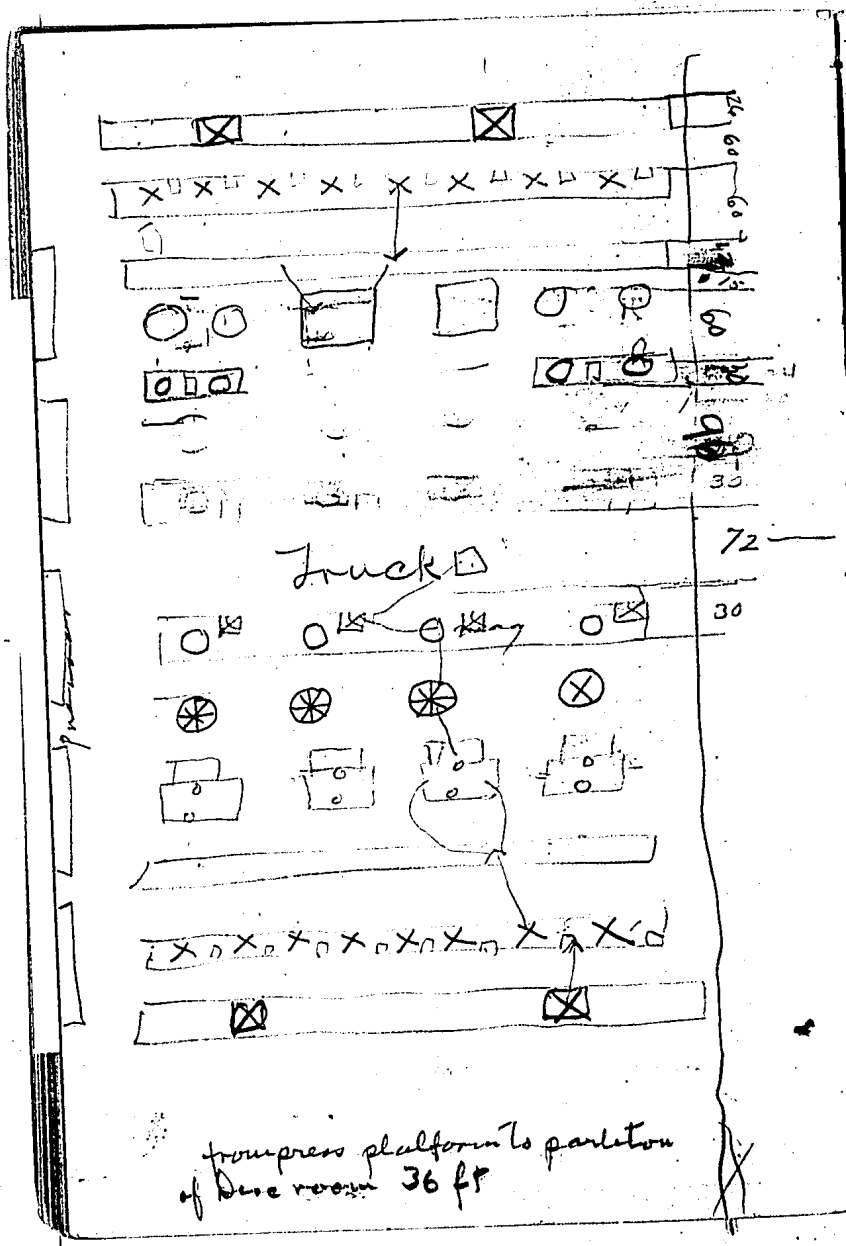




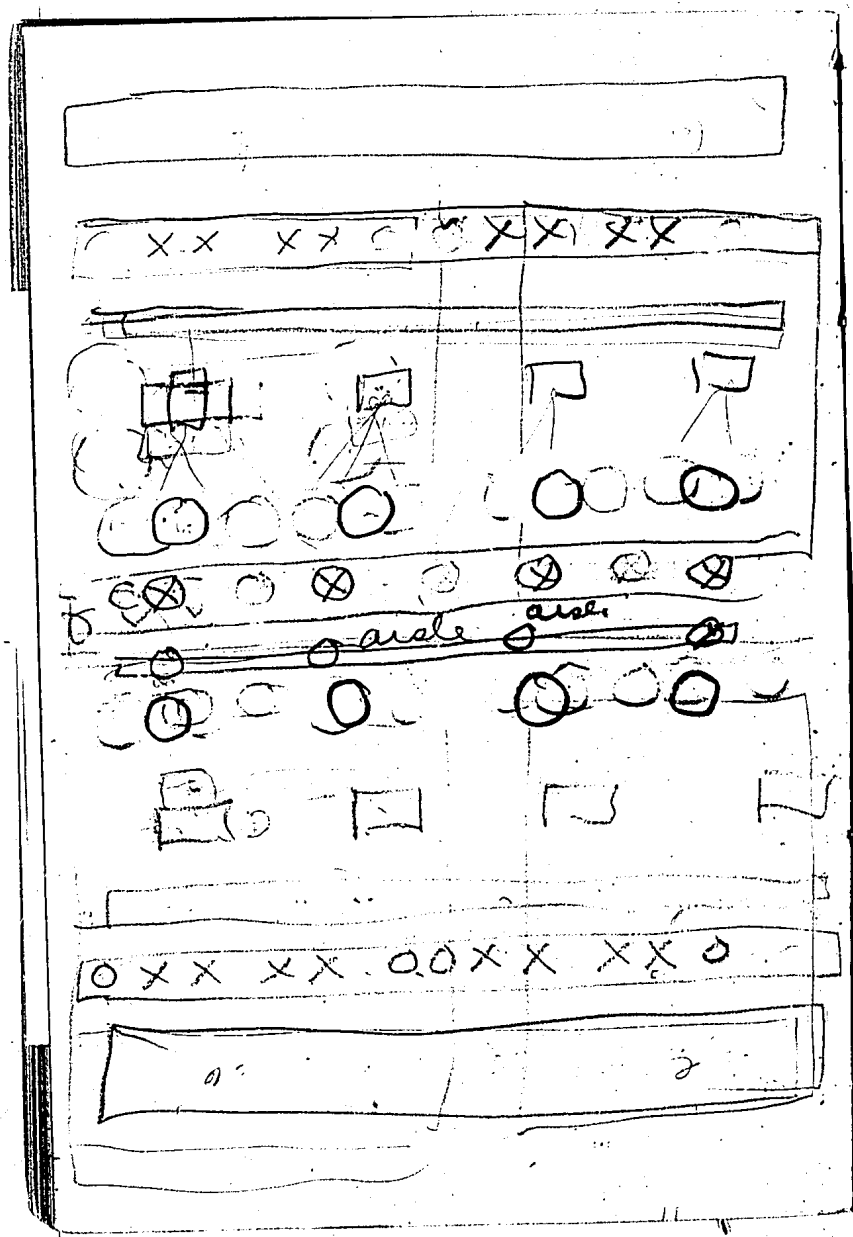

Pretzels
Truck

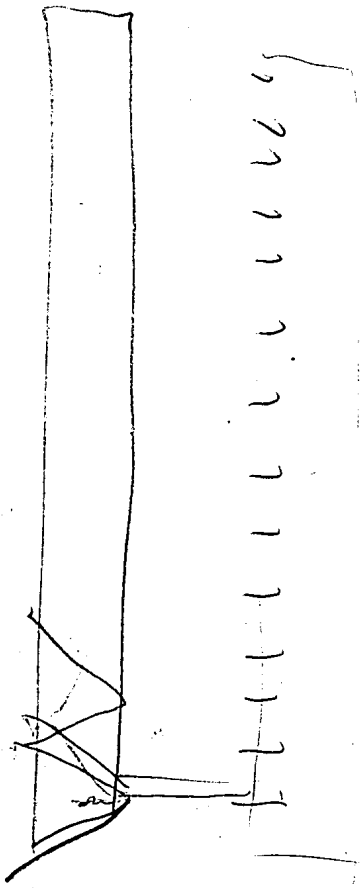


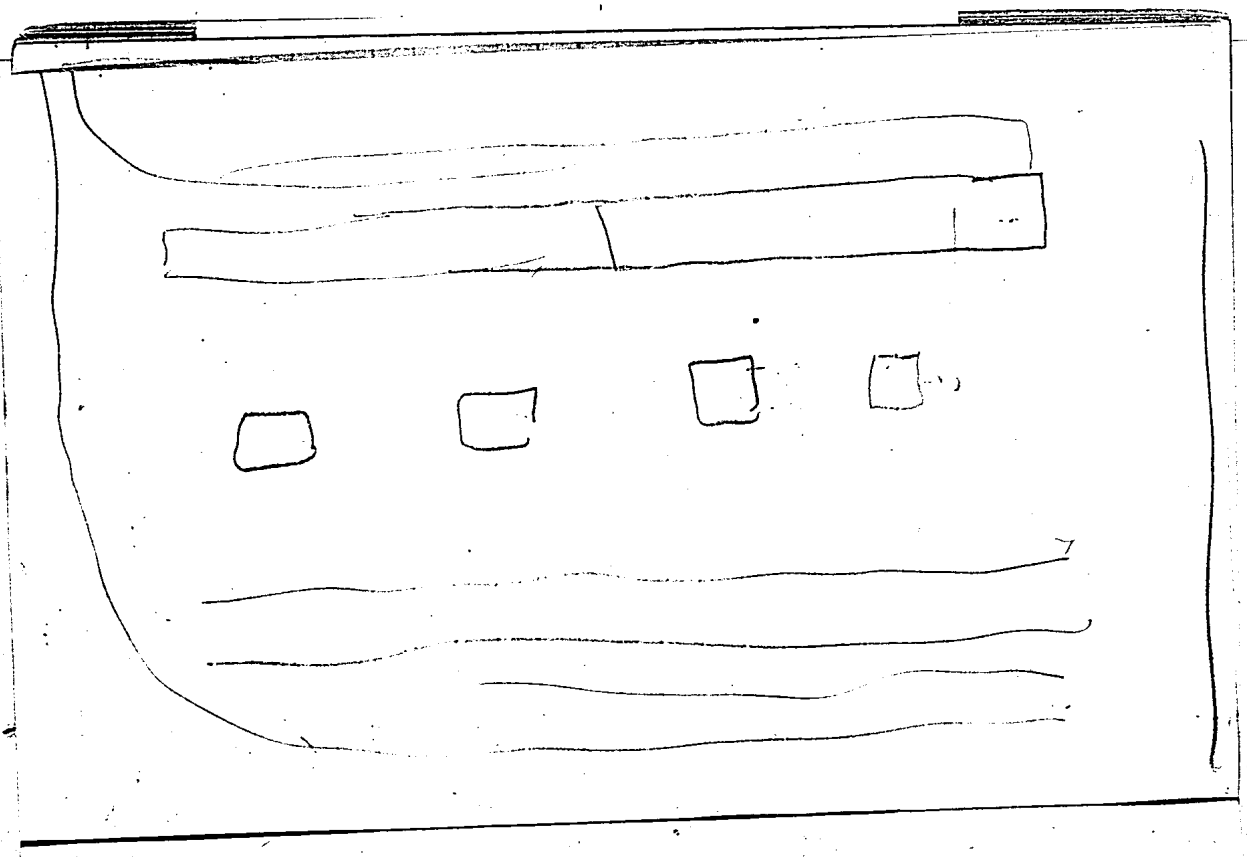


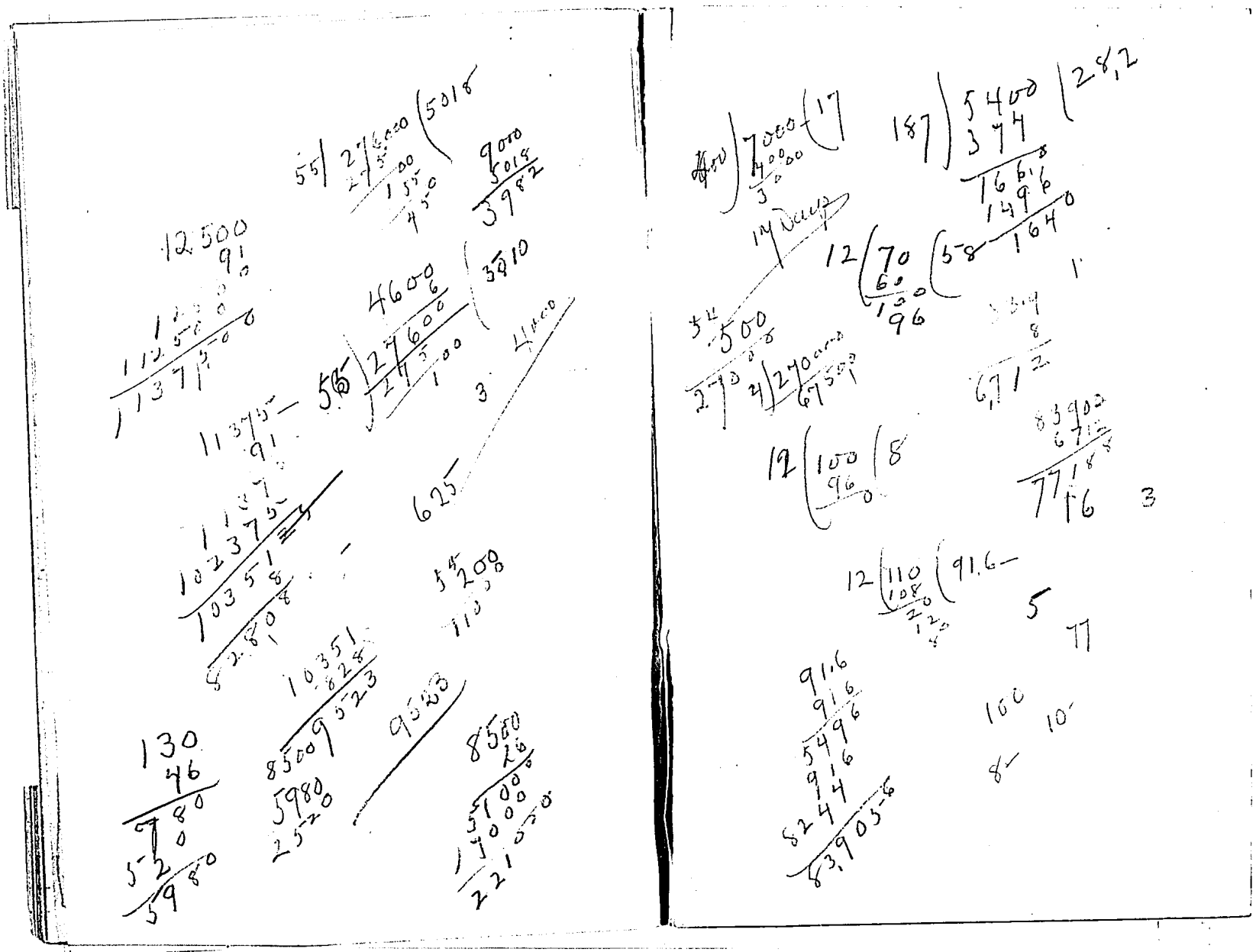


from press platform to partition of Dore room 36 ft





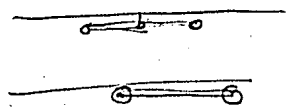


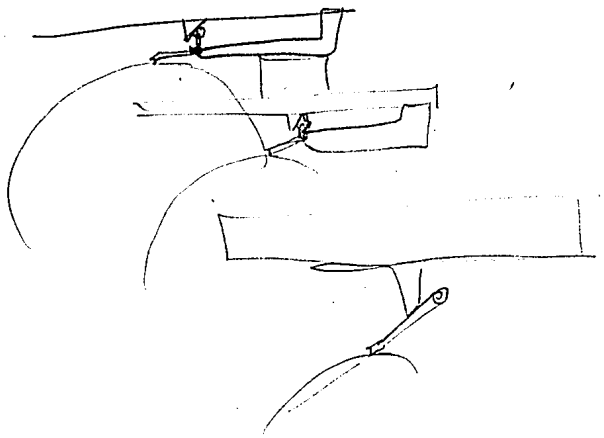


Notebook Series -- Notebooks by Edison
Notebook, N-14-06-00

This notebook contains two undated entries by Edison--a drawing of cylinder phonograph recording or reproducing apparatus and a list of various oils, alcohols, and acids. The entries were probably made in June 1914. Also included is a table, probably prepared by William H. Meadowcroft, of six disc record selections, with data on the number of records ordered and reordered during the period June-August 1914. A final entry by an unidentified experimenter lists four lots of chemicals. The pages are unnumbered. Only five pages have been used.

Only the Edison entries have been selected.





Gasoline
Benzine Pet.
Chloroform
Carbon Tetrachl.
Ether
Ethyl Alcohol
Methyl "
Acetone
Benzol
Glacial Acetic
Nitric acid
Hydrochloric
Gasolene
Kerosene
Paraffine oil
Carbon Trichloride
Amyl Alcohol
Carbon Bisulfide

Notebook Series -- Notebooks by Edison
Notebook, N-14-08-07

This notebook was used during the period August-September 1914. It is the second of a four-book series, preceded by N-14-04-30 and continued by N-14-09-30. All of the entries are by Edison, except for some small notations by Sherwood T. (Sam) Moore. Many of the entries relate to the transfer and printing processes involved in disc record manufacture. Included are notes describing results obtained with various experimental varnish compounds. Also included are entries on the synthesizing of phenol (one of the ingredients in varnish) from benzol. These experiments were necessitated by shortages of chemicals formerly purchased from Germany. A notation by Edison complains that he was "Forced to this improvement by the War -- Thus science triumphs over art." Also included is information on the amount of carbolic acid on hand as of August 26, 1914, and the cost of chemicals from the General Chemical Co. Additional entries pertain to experiments by Charles T. Dally on patching discard records (cracked or not filled) with varnish and to distillation experiments by Jonas W. Aylsworth and William W. Dinwiddie. Entries toward the end of the book include an extended description of problems with varnish, as well as tabulated results obtained with experimental varnish compounds in July-September 1914. These results include notations of the varnish lot number, the weather, and the percent of successful transfers. The notes indicate that Archie D. Hoffman assisted Edison with his experiments. The front cover is labeled "No 2 Disc." The pages are unnumbered. Approximately 150 pages have been used.

July 29 7 1914

Blank 842–855 —

879 2/10 Para 6% Penta – 7 hours oven
120 Tranfd

83% Transfers

Pull outs	12
Ckd wood	4
Ckd Var	1
Mechanical	3
	20

plates

Buckles	9
Uneven	162
Dirt	4
Raised	5
Dimples	3
Chipped R	1
	184

Unworkplates 248

867 Var blank 855 oven 1-2 7 hours
156 Tranfd

75% Transfers 1/10 Para 4% Penta

Pull outs	27
Ckd wood	6
Ckd Var	3
Mechanical	3

All of these duck feet, nothing Cheeks up

867 - V · 1/10% Para 4% Penta

Transfers 70% 2676 Transfd plates discard

Pullouts	637	Bubbles	115
Birds	45	Uneven	74
Ckd Uneven	58	Dirt	69
Ckd Var	27	Raised	20
Mechanical	33	Ckd	7
		Dimples	115
		Chipped R	37
			437

Uneven 6276
Patched 73

Another 878 Var 1/10% Para 6% Penta
168 Transfd 80% GR

Reject

Pullouts	25	Bubbles	34
Ckd Uneven	7	Uneven	2
Mechanical	1	Dirt	2
		Raised	4

Count 62
Bubbles 386
Uneven

868 Blanks –

25% ground blanks 71% Hrm 180
75% Req recorded

Transfer 93% – 149 Transfd

Pull out 1
Bird 2
Ckd Van 6

632 Req Van

---

897 blanks –

25% ground Blanks 56% Hrm 180
75% Req Recorded

892 – 92 Transfd

Transfer 90% OK

Pull outs 3
Bird 1
Ckd Van 4
Mechanical 1

866 Blanket

632 Van 50% phenol resin +
50% Rosin wood substitute

100 Transfer 43% OK

Ckd Warp 6
Ckd Van 6
Weak 5
Burst out due to blanket 40
Total 57 Discards

---

880 Van blank 842-855

315 Transfer 87% OK

10% Para 5% Resin plate discards

Cracked Center	1	Bubble	13
Lift	4	Uneven	2
Pullouts	23	Dirt	3
Ckd Warp	4	Raised	2
Ckd Van	6	Ckd	1
Weak	2	Dumpline	2
		Chipped R	1
			24

uneven 606 plate

Bayway Melaporia Creosap —
35% Formaldehyde - Resin —

Powder Varnish —

12½ lb Resin
27½ DZ Nat alcohol
180 grams 6/4
57 grams Paraphenylenediamine
50 lb Load for 2
1 lb Lampblack

Veneer 632 Reg Varnish

6 OK — all

899 - Veneer 1 para 8% 6/4 —

6 OK all —

Weinaco print + freeze —

Prints don't work good
Cracks May be
blank grass same

Dudleys Experts on Reg 699 -

3.5 mm to 12 mm Viscodelg plates dried naturally & with heat (air) show that plates are more even than ~~air~~ dried naturally, but more bubbles but Comfel — it appears to be better all round to heat dry —

877 Blanks Unbaked

These blanks have been made from Resin from Metapara Cresol from Bayer Coal -

12.5 MP resin
27.5 DEH alcohol
180½ grms 6/4
57 " Powd
50 lbs Wood fibre
1 " Lecithin Powder

632 Req'd

Traces few 100 %

OVER

Prints -

OK

Discard puffed edge IIIIII

Not full print most cases

Correct ~~puffed~~ just puffed some on edge III

Correct Poor print. 1

We took some of the 877
blank as used on previous
page ~~#~~ Baked them 2 hours
at 730 ~~Later~~ — There was
puffed Edges but not near so
bad as Cracked
632 Varnish used

Transfer 12 acceptable 100%

Prints
OK 5
Ducardi Edges puffed up 6
Comal puffed Edge 1
Cracked 1

40% OK —

There is no puffed Edge on these showing that increasing from 5% 6/4 to 8% 6/4 has killed this bug

But blank gives poor prints, it gives away at Edges when blank

906 Blank
Mix Lot MP Consol Bag (old)
8% 6/4 — 899 Van

Transfer — OK 4
Consol 2 — small part edge flowed out

632 Van OK 2
Crkd 1
Consumed 3 — Edge blank flowed out

Print of 632 Van — 632 Van
OK —
Cracked Edges IIII at poor prints
Consol 1

Print of 632 Van but 899 Van —
OK 1
Cracked at Edges at poor print 1
Poor print on Margin II
Cracked Edge Music II

85

12/100/63
96
400

Baycoat MP 904 Blank —
40% formaldehyde used to MP —
11.7 Straight 6% 6/4 — hair pores 1/2 % —

632 Var

Transfer
OK 5
Discard 1 — pulled next 3" sq.

Prints —
OK IIII

None puffed at most filled edges —
all are little chg of following 2nd pr
but OK

899 Var Dup of above

Transfer
OK IIII
Good 1
Discard 1

Print
OK III

Most have edges not
filled but are OK

Not batted

909 - Metal Tray way 40% formed
0,18 from Metal — 6% 6/4 —
½% Para.
Transfers - 903 Van 11 Returned freely
1 Stuck

OK. IIII IIII Edges burst out 11

Cracked at edge redepart 1

Prints.

OK 11 Comed 11 (ck)

OK Doubtful 1

Poor print & Cracked IIII

Cracked from Line 1

Not filled - 11 16% & poor

Moore unpacked Edges
80% required powder
of 60 ray blanks only
found one Edge burst out
Showing Metal as
brittle rain —

910 Lot Not Baked Everything same as 909
Except cocoa-baked more brown
6.9 four 11 Pans in —

Transfer — 11 released from perforations
1 cracked

OK. 11 11 11

Little Edges cracked
Much " " 11

Prints

OK 1111 1

Correct - 11

Hard Lines cracked 11

Poor fill big Cracks 1

66% —

but poor - poor fills
on Edge

Not baked

911. Same as 909 & 910

Except 10.5% Free MPara left in -

10 released freely
2 stuck

Transfers

OK |||| |||| |

Edges cracked bad ||||

" " slightly

Released free edges cracked |

Prints

OK ||||

MG Poor fill + Cracked ||||

Cracked |

Good line crack to poor print ||

33⅓ OK but poor

OKs are right on edge, they don't fill well ^ they don't OK

Cracked where transfer Cracked at Edges

12 (20 12 C40 (16

Not backed —

915 Blanks — 97+98% Barrett Mfg Co —

7.5 free ~~Staff~~ Van 903 —

2:16% 6/4 — on account of small amount of free MP in resin —

Transfers — ½% Paste 5% base —

OK — IIII IIII Will print all —

Edge burst I

No edge burst I

Lift. Cracked II —

Prints.

OK II — Puffed up Edges IIII IIII

Poor print I

Give away (Vacuum) I

16%

Not Enough 6/4

913 Blank Not Ecked -
903 Van

97-98% Barrett,
6% ~~straight~~ 6/4
7.56 free Barrett ½% Para

Transfers
OK |||| |||| had Edge covered ||||

Cancel || - as far as Blank is Concerned
one hole pull out to Blank + 1 big pull out in Van

Proofs.
OK.||| Proffed Edges

Poor present ||||||

Cancel ||

41%

12 | 50 / 44 / 20 | 41

Not Coated.

916 Blank

903 Var -

95% Crude Carbolic Barrett,
6% Naphtha. ½% Para
8.2 Free Carbolic —

Transfers -
OK. |||| |||| ||| Edge crushed ||||

Prints
OK. ||
Poor print ||||
Coned ||||
Coned dark fill 1
Cracked due to Poor Print 1

None Puffed Edge

50%

.8 | 4 24 (5/13
4 0 14
½

We are now trying to make Phenol from Benzol synthetic by the Benzenesulphonic process

75 Lbs Benzol	$ 2 48
530 Lbs H_2SO_4	4 24
Carb Lime 75 Lbs	0.07
Na_2CO_3	0 70
Caustic Soda	5 56
	$ 13 05 - -

Yield 91 Lbs Phenol.

14.3 Cents Lb without labor.

8/19/14

921

50 lbs Meta Para Cresol (Bayway)
20 " Formaldehyde

Yield 35 lbs
Tden Cresol 17.6%
Recovered 13¼ lbs

The M,P cresol resin in #920 is from resin #921

Doubt seem to be as good when Resins are mixed as when MP + Phenol are made together in Reg'lar Set'

Reg 903 resin

920 Blank — Not Baked

Mixture of 75% MP Bayway resin with 25% Reg Phenol resin
6% 6/4 straight
½% Para 4 to 1 powder

Transfers OR IIII IIII II
All OR 100%

Slight crushed Zap 1

Prints —

OR IIII II

Poor print + Crack off side 1

Poor print on Mica, will reprint 1

Poor print + feed line crack 11

Top of wells broken off 1

12/70 1.5 1.0

C35]

919 Resin in Digester
Made,
30 Lbs MP Cresol Bayway
10 Lbs Phenol
16 Lbs Formaldehyde
Made same as remake
Phenol series
Yield 19 3/4 Lbs —
10.3% free MP & Phenol —

40/200 (50 49.3%

Promising 83%

Not Baked

918 —
75% MP Bayway
25 Phenol — in Digester —
6% Strength 6/4,
1/2% Para — 4 to 1

Resin — 903 Varnish Veneer

Transfer —
OK. IIII III II
Edge Cracked 1
Slight " 1

Prints
OK. III IIII
Line crack Poor print thin card 1
Poor print 1
Cancel 1
Fair Line Crack thin card 1

83%

12/100 (83
9.4

Not Baked

Blank

917 –

2.27% 6/4 – on 5% Casein –

½% Pecan – 4(5)

Lot A° of Var 501 B

Not Baked

914

1.95% Barrett Crude Carbolic –

30 lbs Crude

12 lbs Formal

4½ lbs NH4

yield 18½ lbs 8.2% free Carbolic –

61% yield

917:

Thumbtacks emphasizes may be mistaken for Req blanks and

of transfers

OK. IIII IIII II

66.6%

+ 3 Emb pinpointed

Print

OK. IIII II

Couch 1

about 25% of Couch

Poor print, Crooked edge music Discard 1

Poor print III

12/60 / 66.6%

Dup of 917 Blank –

Still may be suspicious as the same Lot # of 6 Cards

Transfer

OK IIII IIII II

12/7

Another Lot of Transfers

Transfers
OK |||| |||| |||| ||||

100% all OK — none cracked at Edge

18

Prints —
OK |||| ||||

Not filled in Mosaic ||
Poor print on Margin |||
feed line Crack 1
Conc. Crack near edge 1
Dressed by Crack ||

all these Cracks both sides, paper across at same time

55%

Not Baked

9292 A

#919 Resin — 2.9% 6/4
On 5% Base 1/2% Peroxide 4 to 1

Transfers
OK |||| |||| || all OK

Bad Edge Cracked 1
Edge " 1

Print 12 —
OK |||| |||| ||

100%

Dup 9292 B — these blanks made later than 9292

Transfers OK |||| |||| |
Crack 1 —

91%

Print, OK. |||| |||| ||

CMJ

Gen Chem Co

Quote, 90 cents 100 lbs
for fuming SO_4 — 20% SO_3 —
In Drums Carload lots
100 Less than Carload
lots 1.15 per 100 Lbs
Delivered at Orange
Drum returnable
if unused or last
30 days or 1% Cash
10 days —

Dally's Experts patching
discard seconds with defects
where cracked or lack of fill

Use Seq Var with 6/4 machined to
10% of Resin & 1/2% Para
instead of 1/2% —

Painted over a rack then
baked seconds for 1½ hour
150 @ 150 To condense then
pressed on Lamination press
between 2mm Sheets to
finally harden —

Then Painted Red

They seem OK & believe we can
stop discards altogether & return
with Varnish, Transfers & Print &
Correct every defect which are
now discard for

Forced to this improvement
by the War — Thus Science
triumphs over war —

Not baked

922 C - Duplicate of 919 B Resin - 1st off
made in duplicate

Same blank as A + B Except
3.04 6/4 on 5% Basis — Yield 50%
11.1 free MPP in resin —

1 - Very delicate edge [illegible]

Transfer
OK. 𝍸 𝍸 II
100%

Print
OK. 𝍸 𝍸
Cancel II
100%

Not leaked

922 C (Dup 919 Staff)
as an heat pipe to a Rad
To let Incuefram cool
24 hours before pressing

3.04 6/4 Incuefram 1.50 PM 20 deg

OR |||| |||| 12 –

Cracked 1

will hold 48 hours before Printing –

131
Impeated after ~~48~~ hours
Transfers OK |||| |||| 12
Cracked 1

will keep till Monday Then unpeel & print

Prints

OK |||| ||| — 8
Poor print ||| — 3

No cracks

17 | 50 47 0 3 (17

Not baked

2.9.6/4 – Lot 919

Transfers to be held 48 hours to see if Crack

Transferring 20 2.39 qui –

OK IIII IIII

Cracked blister 1. } 11 only in the lot.

After 48 hours rest

Transfers OK IIII IIII –

1 Ckd raise –

Will hold till Monday – inspect & Clear print

After 135 Hours no [illegible]

Prints OK 11

No cracks.

Bay Way - MP Cresol
400cc

15 cc came off below 165 Cent
136 cc " (165) 183-192
201 cc 193-195
39 cc 195 195.5
3 cc Residue

Merck Gives Boiling P
Ortho 187-9
Para 198
Meta 202

95% Barrett fused on decomposition, decided
accurate work right, W2 Flask 400 cc
& distilled it

95-110° Cent 16cc - 3/4 water
189-192 55% 220 cc Spec G 15°C 1.034
193-196 16.25% 65 cc mostly came off 193-197 - Spec G 1.031
196-198 18.25% 73 cc Spec G - 1.027
Residue black tarry liquid 20 cc 5%
Total 394 cc 98.5% of total used

Dimroth distilled it -

97-99% Barrett 400 cc

2 cc came off below 202 Cent
21 cc " 202-206
285 cc " 208 210
60 cc " 210 213
23 cc " Residue

No4 Transfer OK III
924 blank
Ring Cluster Ckd III } 6 -
will print - Slight Cluster 1
OK Red Center II

Prints OK III — } 3

JWA Experiment 5 924 Blank

921 Resin - temp in dryer kept down so not to fuse Resin -

8% 6/4 1/2% Resin 4 to 1 Powder

1 =	2 1/2	minutes	mixed	2 1/2	min 1000 CC
2	4	"		3 1/2	"
3	5	"		3	"
4	5	"		5 -	"

No 1 - Transfer OK IIII
924 blank Cluster Ckd 1 } 6 = Edge Cracked 1

Prints OK IIII
poor print Cracked 1 } 5 —

No 2 Transfer OK III
924 blank Cluster Ckd 1 } 6

Prints OK 1 —
Poor print II
feed line crack II } 5 -

No 3 Transfer OK IIII
Left Cracked 1
ring print - Cluster 1 } 6 Cracked Edge Bad 1

Print OK IIII
Cracked 1 } 5 —

No4 Transfer OK ||||
Blister Ckd ||
Blister Council 1-ng
Cooked Center OK 1
6 -

Print OK
Poor print & Cracks 1
Poor print, Blisters 1

None OK -

gwa —
925 Blank

921 Room
8/. 6/4

Temp on Dryer Kept down Not to fuse powder
4 to 1 —

No 1	2½ mm	Contact	2½ Mm	10000 lbs
2	4	"	3½	"
3	5	"	3	"
4	5		5	"

No 1 Transfer OK |||| — 6 — Edge Cracked ||||
Print OK ||
Council ||
Not quite filled in Recess ||

No 2 Transfer OK ||||
Blister Ckd ||
Print-OK ||||

No 3 Transfer OK ||
Blister Ok 1
" Ckd ||| — 6
Print OK ||

926-Resin — 927 blank

50 lb { 75% 95% Crude Carbolic Barratt
25% Phenol
30 1/1 4 Formaldehyde
Yield 20 lbs
Free acid 15.1%
Recovered 12 3/4 lbs } Resin

Blank 927 - Varnish in black powder
6% 6/4 Straight 1/2% Para
4 to 1 powder Not baked

Transfer - OR IIII III

5 oz Lot 903 Varnish - all precipitated

Cracks edge faint 1
Big full out 1

Notice - No Cracked Edges -
Whole Brands flows a little

Rounded

Dally dont get rough stuff on his fine deep pull outs – or holes is full of dent – must get fine drill + clean it out –

Dally Repair Originally Recorded
Aug 22 1914

White spot.
OK IIII IIII IIII I

Cracks OK II

Pull out. Discard – III new cracks came on on Painting

Pull outs OK II

It looks as if the repair process is a great success
Holes should be cleaned & subsequent Pen used as on Dayton an Excess Cracks above –
Only bad phenomena is new cracks show up not originally in – will find if they come on Painting or Finishing baking of repairs

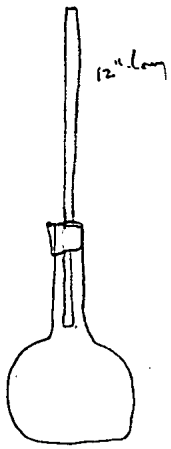
(591)

Cresols require 30 To 40% of
Formaldehyde 40%

Phenol 50 to 60% Formaldehyde

If 100 grms Cresol used then use
40 grms 40% Formal &
25 grms Ammonia Alcoa
50 grm " quick | action.

Put back on hot plate Tuesday 9 AM —
Took off 3 PM - drove off on burner some of the free liquid & coke got to thick & caps poured out on Pie plate —
The High boiling ones is Chalked a-gain & begged yield —
The residue, I kept on too long it Condensed —
Residue is best of all for yield —



30 cc Barrett 95%
12 cc Formaldehyde 40%.

Put on steam plate —

Dunwoldies Distillation 3 boiling points,

		400 cc
No 1	189-192 —	220 cc
2	193-196 —	65 cc
3	196-198	93 cc

Dunwoldie says it ~~boiled~~ ~~Water~~ Rose - before 9 PM Saturday — Sunday 9 AM Sat.

On at 6 PM Saturday

~~Took off at 10 PM Sunday~~

9 AM
Monday all Condensed - No 1 clear & yellow No 2 harder & not clear No 3 Hard & not clear

Not Coined -

928 Blank - made of 926 Reich

4.16% 6/4 - 5% 6 case

½% Porn -

4 to 1 powder

Lot 502 Van
903 Van

Transfer OK - IIII IIII II III. Shifted edge Cracks

all OK -

Print OK IIII

Coined I

Poor print II ____ probably not fault of blank

Cracked on feed line I

Cracked Coined II

50% without Coined

75% with Coined -

919 - Triplicate Bay Way to check -

37½ MP
12½ Phenol
20 formaldehyde
yield 30 lbs 40%

No 1. Sample is principally Ammonium carbonate drawn off when steam shut up.

No 2 Came over 5 minutes after superheater was put on, it was on 1/2 hour

No 3, is at end of No 2

No 4 is last mostly water from superheater —

Run —

929 —
34 1/2 95% Benzol.
12 1/2 Phenol
17 1/2 formaldehyde —
12 1/2 % ammonia —
Yield 31 Cc —

Received 11.3 — 6.2 % of Recd
13.25 —

88% Recovery all together —

Daily Repair Experts —

59 to 66 – Not baked beef
air dried 24 hours –
average temp around 85 Fah.

C713

poured out on Pie dish

No 3	200-202 thin	Wt 26.25 grms
4	202-205	26.70
5	205-204	28.80
6	205-209	26.50
7	209-218	28.50 -

At normal Temp all are Viscous

205-209- + 209-218 } thickest greatest yield

There is considerable free cresols to come off - to get hard resin -

The Residue was ok heat when I put on burner to drive off some cresol it Condensed to Rubber

Barrett 95 distilled by Drummond
6 portions 5 clear 1 Residue

30 cc of Barrett 95 - 10 cc formaldehyde —

On 3 pm — Monday

at 6.20. Residue Condensed to Resin -

at 935 none of the others have gone off to Resin — although cloudy when shaken

at 1130 pm had to go home took all off the. 209-218 is very thick almost a resin the next thickest is 205-209 - the others are thick liquids — tomorrow will put on again — ~~Took off~~ Tuesday 930 put on again - at 3 o'clock took off & heated each on Bunsen burner drove off till thick -

JWA results of Distilling
97-98 Barrett

		Boiling Points of Phenols
1st Distillate	179–184.5°	187 To 190
2nd "	185–194	191 to 193
3 "	194–200	198 to 199
4 "	200–206	205° to 208°
Residue still mostly fluid. cold		208 + Higher

Testing Distillates by Nördlingers Test

#1 Practically all ortho + some phenol 8.18 %
#2 Mostly meta + some ortho 37.2 %
#3 All Meta or Para 41.8 %

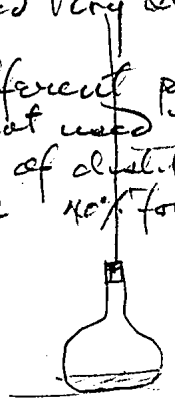
#4 Some Para + Xylenol + higher fluids 10.16 %
Residue Xylenol + higher Phenols 1.4 %

Distillate for making Resin
of 97-98 Barrett
BP 186-190
Mostly ortho + some Meta.

Bennett 97-98 25th drug

Distilled Very closely by Dr. Waldie

7 different products —
1st not used the other 6 used
30 cc of distillate mixed with
10 cc 40% formaldehyde —
Residue Lumpish
black —



400cc

No 1 —	42 cc	Spec Grav	1.039	at 26°
2	60 cc	"	1.039	"
3	74 cc	"	1.037	"
4	66 cc	"	1.034	"
5	70 cc		1.029	"
Residue	42 cc		1.024	"

46 cc lost Item Corks soaked up — Asbestos Etc

Not baked

Duplicate of

930 Blank 919 Resin C.-

3.32% 6/4 5% Basic - 4 To 1

½% Para -

Transfers OK |||| |||| Edge Cracked |||

V small Crack ||

Transfers OK |||| |||| ||. Slight crack edge |||

All OK

Prints - OK. |||| |

Doubtful Cancel 1

Cancel 1

Poor Print 1

Cracked |||

50%

Duplicate of 931 -

Transfers OK |||| |||| ||

Edge Cracked ||||

Not Cracked

931 Blank -

929 Resin -

3·18·% 6/4 - 5·% Beeswax - ½·% Paraffin

4 to 1 -

Transfers - OK. |||| ||||

Cracked Edge 1

Lift Cracked ||

Note some flow to this blank.

Prints - OK. ||||

Cracked ||

Poor Print ||||

Muddy in Middle

oozes out (Resin) from Cracks

10/40

Not Baked

Duplicate —

Transfers OK |||| |||| Cracked ||||

Pull Out 1
Cracked Blister 1

933 Blank — 929 Resin
6% Straight 6/4 — ½% Panca 4Fol

Transfers OK- |||| |||| Edge Cracked ||

Notched Blister 1

Prints OK ||||
Cracked ||
Poor Print Cracked |||
Blister 1 - same as Transfer.
In Music Poor print ||

11 (40/3/3 d 3/7)

The others removed from plate at 1.06 AM Wednesday
Put back on plate at 9:20 am Wednesday —
2 of them Cold loose nearly cool did not flow when flask put on side

Took all off 1 PM —
#6 is Thickest

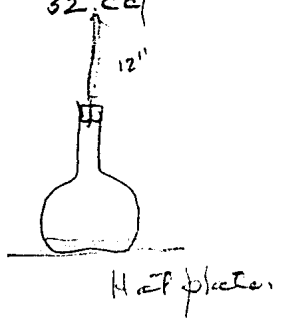
Poured in Tilly Casserole then left on hot plate all night — 9 am Thursday
2 + 4 at 12 noon.

2 + 4 are pretty hard to finger nail but were penetrated, others soften 5 + 6 softest.

24th Aug

Barrell 94-99% —
400 cc

			Spacq	
#1	all up to 202° no reader	15 cc		
#2	202 - to 204	58 cc	1.039	26°
3	204 — 206	60 cc	1.035	26.5°
4	206 — 206.5	62 cc	1.035	26.5°
5	206.5 — 209	62 cc	1.032	26.5°
6	209 - 225	63 cc	1.026	27°
Residue - Thern 1/16 above reading		32 cc		



#1	3.75%
2	14.5 %
3	15.
4	15.5
5	15.5
6	15.75
Residue	8.00
	88

48 cc Lost Mechanical 12%

Put on Hot plate 11 am Tuesday —
Residue taken off Tuesday 907 pm
condensed to Soft Rubbery

(055)

Meat Cooked

934 Blank Room 929-B —

37½ Barrett 95
12½ LG Phenol
17½ Formaldehyde
12½ NH4 —

26½ LGs yield
8.7 free acid —

21 lbs Recovered —

934—929B Room 6% Glycerine ½ Pounds
Kto 1 Blank

Transfer OK. |||||| Crushed Edge ||||

Cancel 1

Rd left probably Cancel 1
Big pull out to blank 1

935 Blank 929 B Racin -
2.41 6/4 5% B acc 1/2 fare
4 to 1

Transfers - OK IIII IIII II Cruise Edge
all OK —

On hand Aug 26th 1914

Carbolic Acid

88130 Pounds

In store Room -	291 Drums	280 Lbs each	81480
	7 "	330	2310
Building 19 =	12 Drums	280 Lbs	3360
Silver Lake	3½ Drums	280	980
			88130

C9L

Not baked
940 Asphaltum Expt.
937 Blank - 921 Resin —
9% 6/4 Straight, 1/2% Para
4 to 1
Transfer OK |||| | Crushed Lift 1
Lift Pulled to Blank || 50% —
Lift Cracked ||||

No wax printing —

Not baked
940 a —
938 Blank 921 Resin
10% 6/4 — 1/2 para
4 to 1
Transfer
OK - |||| ||||
Lift Cracked ||
Hollow won't print 1

Print,

Edison On 4 pm Thursday

Alpha Napthtal - queased at CH_2O —

" at 8 pm found the alpha Napthtal Condensed to hard. —

9 Dried mais CH_2O + heated hot would not melt but softened it dont dissolve much alcohol but does in Benzol -

Beta Napthtal queased at CH_2O =

Edison On 4 pm Thursday

Bay Way MP 8 193° to 195° —
30 cc | 10 cc CH_2O — 250 mlg Para

Hoffman X104 bottle of recovered by superheating Cresol Rasin in dryer | 30 cc 10 cc CH_2O —

Ortho Cresol 30 cc 250 mlg Para
12 CH_2O — at 8 pm no coloration or apparent action so I added the Para

C951

a Naphtol Condenser,
I put up a new flask 30 grams
Alpha 15 g — CC CH_2O. 300 Mls Para
on at 9 20 pm Thursday
at 10 40 its nearly 1/2
Condensed —
Yield about 25 grams
~~Hard~~ hard brittle resin — nothing
free in it I guess.
Has all Condensed at 11 pm —
I find its perfectly & Easily
Soluble in alcohol in
whole 6/4 —
The yield is good & resin
looks fine — nothing
but water boiled over
This is the nicest working
stuff of all, to Date

939 Resin –
25 lbs MP Bay Way
25 " Phenol
22½" formaldehyde
Yield 32 lbs –
Free acid 18.7
Recovered 10.25 lbs –

Not Baked

943 Blank 939 Resin –
6% 6/4 Retrac – ½ Puna 4 to 1
Req 903 V

Transfer OK. IIII IIII II

Split Van Pull out II Van not heard enough not fault of the blank =

Blanks not accepted at Edges – no crushed edges

Print – OK. IIII IIII

100%

OK Cancel

Poor print Cancel

944 Blank 939 Resin
5.21 %. 6/4 5% Phenol 1/2% Para Tol

Transfers OK |||| |||| || all ok.

Red spot not corrected + mirror edge, on roll 1

Print -
OK |||| ||||

Poor print 1
Poor print Cancel 11

942 Resin

25 lbs Baycoray MP
25 " Phenol
24½ Formaldehyde

57% Formaldehyde on phenol
40% on Cresol

Yield 31 lbs

Freezed 18.3
Recovered 12

Not Baked

945 Blank 942 Resin

6% 6/4 Strength : ½ ppm 4 to 1

Transfer OK IIII IIII

All OK –

2 Small Holes not cured Comet 1

Prints OK IIII IIII

91%

Cracked on Edge 1

946 - 942 Fwd

5/6 brass - 5.07 / 6/4 ½ pcs 4 to 1

Transfers OK. |||| |||| || Crushed Edge ||

all OK

Prints OK - |||| ||||

2 bad Varnish.

947 Blank 939 Revin —
6.21% 6/4 6% Basis —
½ Para 4 to 1 —

Transfer - OK |||| |||| ||| all ok —

Prints OK |||| |||| ||| all ok

948 Blank 939 Resin

Same as 947

but 20% ground powder

Transfer - OK. |||| ||||

Left Cracked ||

Prints OK |||| ||||

Cracked on Edges |

Not Cooked

949 Blank 919 Resin

50% 919
50% Phenol Resin -

5.9% 6/4 6% Base - 1/2 Para 4 to 1

Transfers — OK |||| |||| || Good Exp 1
all OK -

Prints OK ||||

Poor print ||||

Evidently 6% Base too high 1

258 old ones of blanks

Old ~~479~~ Blanks Represented.

OK IIII III

feedline crack II

New labels don't work on old Labels - Must
represent with old labels, otherwise
shows both Labels -

950 Blank 921 B 50% Cresol Resin/Phenol
50% Phenol Resin - Make Separate
and Mixed together on the Formwash
6% Acrylic 6/4 1/2 Para 4 to 1

Transfers OK. |||| ||||

Left Cracked ||

Prints OK |||| ||||

Comers |
Cracked ||

951 Blank 66⅔ Cresol MP Resin
made separate
33⅓ Phenol Resin made separate
6% 6/4 Straight ½ Para 4 to 1

Transfer OK. II

Lft Cracked IIII

2" pulled off II

Cooked I
Cooked Ckd I

I

MG

Prints OK IIII

Lft Cracked II
Poor print II
Head Imp Crack II

2 unprinted

Not Coated

954 Blank 40% Cresol Resin Bay Oay

6% 6/4 60% Reg Phenol resin

Straight — ½ Para 4 to 1

Resins made separately

Transfers OK. |||| |||| ||

all OK —

Prints OK. |||| |||| ||

all OK

Slight crush edge

100%

953 Resin ~~batch~~

1050 lbs MP Bayway
399 " formaldehyde — 38%
yield 736 lbs resin
70.5 lbs received

13.8% free Phenol in resin -

23¾ hours making 1½ hour
unloading — Resin very thick
took 40 lbs over precaution to
unload —

Reaction very mild run up to
250 lbs on 4 min Safety Valve
Lifted heat Some pressure

954 Blank 953 Resin —

40% MP Resin 6% 6/4 Straight
60% Phenol Resin — 4 to 1
20% ground Granules on it
½% Para

Transfer OK. |||| |||| ||

2 were ng but no fracture

Presses — |||| |||. OK — 2 not pressed —

C121J

958 Resin –

1050 lbs Bayscay.
367.5 lbs Formaldehyde 35%
Recovered 256 lbs
Free Cresol 16.2%

Reaction with pressure went from 20 lbs to 110 lbs in 15 min –
Came back to 80 lbs, when
distilling off water pressure
went down to 20 lbs –
the reaction started over
pressure went to 80 lbs
began –
time 23½ hours 35 minutes
to unload to 30 lbs over
pressure Resin thick + Clear
Transfers OK III III II allOK

959 Resin.

to Recovered Cresol from 953 + 958

Used 50 lbs Cresol
17.5 Formaldehyde 35%

Yield 29 lbs
Recovered 21 lbs
free in resin 8.5 lbs –

Reaction very wild highest point
95 lbs pressure with steam on
full – 9 hours to make resin
½ hour to unload –

Transfers OK III III II allOK

Top Trays of Couch

90% Leaf 540 9/19/14
Blank 842-954 — 7 Trays

302 Transfd
192 OK
110 Discarded

Left Cracked 1
Pull outs 84
Cracked corners 3
" Varnish 21
Mechanical 4

Print Top
Ckd on Margin 36
" " Music
Poor prints 2
Total Printed 192
OK 151
73%

63% OK

Bottom Trays same as above

237 Transfd
95 OK
142 discarded

Pull outs 100
Ckd Var 41
Mechanical 1

40%

Bottom Prints
Total Printed 95
OK 77
Poor Print 1
Ckd Margin 16
Ckd in Music 1
81%

962 Blank Sawdust in sealed can from Solomon presumably Southern Pine
5% Room 7.7% coarse
Not dried —

7 runners 53% went thru 180 mesh 96%
thru 30 mesh — Blanks stay thick
20% ground Blanks saved —
Transfers OK None —
Cracked HH IIII
Red spots ckd II
Pull out to Black II —
Welds OK — Blanks squirts round at Edges a great deal —

Dep of 962 without 20% ground Black
Transfers OK 1
Cracked by Edge grinding away HH IIII
Left ckd II

Thermo Resin w/ Wood Pulp 60

Sept 22 - We have been having very poor results since about Carson on Labor day - Up to 5th Treatments were averaging 88 to 90 + pounds 85 ammonia then about Carson + did nothing for 4 days when started up, treatments only 50 to 65% + Ex-Mississippi number of pounds by means of our Records could not account for pounds it was the result of a big batch we had - The batches last more than a week - they are kept hot all the time + Each day We take out as hot as we want

Thinking that perhaps Ferric Chloride was lacking in Penta I made batch Varnish 10 gallons + made 300 treatments Containing 1/4% of $FeCl_3$ to 100% of Resin - The results were Remarkable and only got 16% and not all pulled out, at the same time I made

this Expmt I changed perhaps it wanted free acid the Penta always has free acid so I used 6 ml penta as with $FeCl_3$ but left that out & added 1/8 of 1% to 100% of Resin + 6 ml Cracking 300 Transformer oil 5% of only one piece out would have got 100% yield but there were some cracked wares due to bad flowing of Varnish so this Expmt Rheem 10% Wasn't free acid I used HCl

We changed the old leaf & started used to catch up Penta & then is working OK 85% it has free acid as Hoffman wanted to use 3% of acid to get rid of Chalking they put in it at Mill & Chem Wash out the acid - He uses HCl in Porcelain lined Kettle

After he gets them washed out the acid, he uses it but there is some acid # H_2 will also keeping it melted the whale week & will only heat up to soften while he takes what he wants & then put cover on & let it cool down this prevents the penis from being cooked to death

Tonight I took some of the Penis just as it comes from whale & found it full of acid also very much grow

I find that for hours you can keep it just warm & stir pickled in water & the now still comes out it seems to have an unlimited capacity for holding ~~H_2~~ $FeCl_2$

If the now is to be got out must have a strainer run

by power + frequent changes of water – It's not necessary to boil the water as Trichlorophyl comes off –
I have told FWA to tell Mell stop putting Lime in Penta if they ever did – its not necessary Old penta worked good + had it have lime in it's sauce it was used to diminish the acid so they could stop it. –

Also Tonight. FWA said if I put acid in the alcohol the 6/4 would give off its ammonia + free the formaldehyde I find that neither in alcohol or water, saturated with 6/4 does the addition of HCl give slightest smell of formaldehyde

Ppt of 6/4 is dissolved in alcohol that the addition of HCl throws down hair like Crystals of a salt. The thought that this was MethylCl, but on heating it enormous Volumes of smoke comes off which is pungent & a large residue of Carbon remains —
The Crystals are pure white that comes down —
Some of the Crystals are soluble in alcohol & do not come down on Evaporation gives white residue & had an Excess of acid —
Evidently 6/4 combines with HCl to make a salt very soluble in water but not nearly as sol in alcohol as 6/4 — but on account of large

I find the HCl combines with the Para in Alcohol making it far less soluable but I think the Alcohol is the main reason that it will not precipitate out I will find this out.

amount of alcohol we use, there will be no precipitation,

I have weighed out

No 1

145 grms alcohol
8 " 6/4
1/2 " Para No perhaps
125 mlg HCl which is proportion used in Expmt where got good results - There is no precipitate

I now make 2 more Solutions as above

No 2

has same as above but HCl increased to 250 mlg

No 3

Dup increased HCl to 1 gram

By mistake 1 2 & 3 gram alcohol used instead of Denatured

145 grms Alcohol
2 grms Para
250 cc 1/4% HCl

Want to see if 1/4% HCl will precipitate the Para

No Hg used grain alcohol which dont work like Denatured

No 2 on following Alcohol shows that 1 grm or 1% HCl is a little too much as there is a slight residue on filter paper, its brown & must be the HCl combin with para yet I see a few crystals of the white that look like Coq—

It may be an impurity in the Para which is Crude grain

Now using Denatured

No 1—

145 grms Denatured
8 " 6/4
1/2 " Para CP from DeHaen
1 " HCl—

to wet and Test paper

Acts different from grain
no precipitate—

No 1 Continued - The solution is just linked red + no change at any thing Comes down Can see it.

There is no precipitation showing that the precipitation of Green stuff is due to impurities in the Crude Para used by us - it darkens color and is put in but Can still see thru it -

So this proves we can use up To 1% of Hydrochloric acid in our regular Varnish without precipitating anything out

Providing HCl is put in last after 6/4 Para has been dissolved

I think there is more than we need, we used 125 mls out of 1/8 in one pound of the Varnish we got years ago - but of course the para had some HCl in and may have varied but it could be great ~~by~~ I think with para bleached free of more than 1/2 percent of HCl would be enough perhaps 1/4 will do, Will have to try it

We bleached red para from Wyandotte + found no like as clear by 3 wks -

Later No 1 + find on standing precipitates out Bradow sediment just like Reg para

CHJ

No 2 is 145 Alcohol
8 6/4
2 pure Para with
1 HCl –

On pouring on HCl gets black
Cant see thro –

When the Para is in Excess of the acid and above
Nothing Comes out

Evidently the Para should not be entirely neutralized

No 1 still keeps throwing down brown precip
after filtering twice the filtrate gets cloudy

Either the air or some reaction goes on slowly +
Para precipitates out when
acid gradually Exposed Para

I tried alcohol saturated with Ammonia & then put in HCl, had to use considerable but finally white Ethyl Amine smell but like the Ferric Salt needles as when 6/4 is used –

There is very little Insol but with HCl continues with 6/4 it to form a good Compound –
Not nearly as much insoluble as 6/4 but plenty to spoil Example of the Compound – the Trademark of it's able work –

The precipitation from 142 is getting very small but looks as if most in No 1 precipitated + Very little in #2

Reg Var with 1/8% of Hydrochloric Acid Conc 10 gals Var made - Made same way as Pt 2 open -

Flowing Room 982 54515

Var did not work good, great many dampers + lot of patching up - Room temp 97° Viscosity 70 | 5.05 temp of Var 86°

Reg Packards -

Made	274
OK	236
Dis	38
Lft. Ckd	4
Pull outs	1
Cracked	33

86% .S.S

Procts 236 Printed
41 Discards -
195 OK.

82% with all discards
226 are really OK
others not due to Varnish

Discards

Pull out Margin	3
Cracked	29
Poor Prints	2
Ckd feed line	7
" Music	1

Cracked - Music 3

95.7%

Here is record of tests with old Penta Cracked seventeen days -

Sept 20 - Opal Var 981

Reg Var with 1/4% of Formaldehyde to 100 of Resin -

10 gals made - Used 150 alcohol to 100 Resin - Viscosity 3:17 room temp 100° Varnish made in open where was Low damp cracked

Flowing room 981 - 54415

Var looks good did not have any breakaway room temp 94° Vis at 70° 3.41 min temp of Var normal 88°

Transfer very poor, attack to plate very poor Grace McComas

Reg Packards 300 made

OK 49

Discards 251

Lft. Ckd 20

Pull outs 231

S S S

93.4% without pull outs

Prints 49 printed
10 Rejected

1 Knock	1 poor print
1 Cracked	
1 Burd	
6 ckd	

80%

16% OK

4477

Made up a Varnish
145 alcohol
10 6/4 HCl Combs boil only about
6 minutes. No pain or Penta
Condenser or boiler plate
quick no gum there is
no doubt about a HCl 6/4
Salt that is as good as
6/4 + Cl used the brown
of Ammonia when completely
May not want either
Penta or Penta - Varnish very
thin -

Seems lots bubbles
+ acts bad -

Sept 23 & 24th Penta now used
tested by us Moore No 2
was practically free from
acid and iron - scarcely
a trace of either, put in HCl
to see if any metallic Fe
there was none, so washed
acid out,

No 1 Edwood is the Raw
stuff from Wyandotte
had lots acid & iron
washed it free = 6
bath -

Penta old dissolves nearly
all in Boiling Petroleum
Benzine & filtered leaves
residue & solution dark
but if bone black used

its a very light tint of red
& OK — Wife like if what
dwt was is what we want

Moore No 2 after formerly
is very much harder
than Edwin No 2

No Lime was in either —

New Balch Pentz.
3% Hcl. leached-Washed free acid has very
little Iron in it - its very stiff Tar

903- Van Lot 546 — Block 842-907
Overlimed 7 hours
Transferred 3871
OK 3378
Discards 493

Lift, cks 13
Pullouts 285
Bards 41
3=6

87½

Cracked corners 63
" Vertical 57
Weathering defect. 34.

C151

Hooked Experimental Travelers

checked – Rpt Van 983 –
Van 547 – Blank 942–907
Open at 7 hours
Total Transf'd 366
OK 255 –
Discards 111

Left Ckd 1
Pull Out. 88
Ckd Wares 20
Mechanical 2

69%

93% pulled out

Print. 983 –

Printed 256
Prints OK 220
Discards 33 – Not printed 13

Ckd on Music 11
Ckd in feed line 14
Ckd on feed line 2
Poor print 6

87%

Cla Penta

903 – Van 548
942–907 Mixed Cards 7 hours
Transferred 1986
OK 1291
Discards 695 –

Left Ckd 7
Pull Out 603
Ckd Wares 29
Ckd Varnish 47
Mechanical 9

65%

95.4% reached pull out

Dup of 982 -

982-551 Var Thes is dup of 982 Madeon Sept 21/14 Except new Penta, new Resin (1/8) % of Hydrochloric Acid Alcohol 142% Visco 3.10 Room temp 109 Fahr

Flooring room - Flowed accpt 24/14 at 4:30 pm all day run - room temp 86° Fahr temp Var 86° Visco at 70° 3.57 am - room temp 92° temp Var 90° Visco at 70 4.28. PM - Flows good - Remarks better results from this Lot of Var than I had from 5445 B. Reclaim wood Flowed Sept 22 not as many dimples breakaways + Very few thin Edges in fact Var is good Pale

Transfer 5075 58%
OR 2983
Discards 2092

Lifts Ckd 11
pull outs 1830
Cracks 209
Mechanical 45 94.8% w. Flowed lifts

Resin Varnish

Sept	Resin	Added	% Transfers		Temp flowing Room
1.	18.4	3.6	89 - 88 -		
2	18.4	3.6	90.		
3	17.9	4.1	91.		
4	"		92		
8	"		78.	53	
9	"		73	76	
10 AM	"		77		
10 PM	19.3	2.7	83.		
11	"	"	75		
14	"	"	59		
15	"	"	68		
16	18.6	3.4	73		
17	"	"	81	80	
18	"	"	85		
19	"	"			
20	"	"			
21	"	"	83		82°
22 AM	"		87		89
22 PM	17.1	4.9	65		84
23	"	"	79		84
24	"	"	61		Hot Sept,
25	16.9	5.1			
26	"	"			

[155]

Notes –

Alcohol in Vacuum Varies from
115% To 100% Rean –
To 155% & yet. got good results
so there is no appreciable
bad effects from more or less alcohol
Best about 142% appears
best — This is from all
the data for 2 months, over very
good & very bad periods —

When there is a high percent
of OK transfers, There is from
4 to 10 times more Cracked
transfers than Pull out transfers

When there is a Low percent of
OK transfers – it is just
the Opposite, There are from
4 to 8 times more Pull outs,
than Cracked transfers –
The Cracks don't vary much

Jamestown NY Weather Bureau

Sept	7 AM	7 PM
1	70	81
2	73	86
3	75	78
4	67	66
5	57	71
6	61	72
7	69	73
8	55	60
9	50	60
10	49	65
11	53	59
12	57	59
13	58	60
14	57	60
15	60	63
16	62	69
17	61	76
18	68	82
19	68	63
20	60	73
21	64	86
22	73	80
23	71	80
24	74	68
25	58	64
26	50	58
27		
28		
29		
30		
31		

It appears as of there was no connection between the amount of free alcohol in Resin. 16% or 21% - one gives as good results as the other of Course to all Cresols added to bring acid To 22%

15@16% appears to be the best amount to leave in The Resin & then add alcohol to bring to 22% -

90% Better OK Transfers from following Varnishes

632 Var

	Alcohol	Aleohol (Modified)
382	145	
383	148	
386	145	
387	125 *	
391	148	
394	145	
395	148	
397	145	
398	148	
403	148	
406	148	
407	125 *	
408	145	
409	145	
412	148	
418	148	
431 x	130	102
439 x	145	60
440	145	60
442 +	148	70
443	148	18.4
446	155 *	18.6
452	155	20.1

	903 Var	Phenolic Resin
500	140	17.7
501	141	17.6
502	142	17.6
503	142	17.6
504	145	17.9
505	145	17.9
506	145	17.9
507	142	17.3
508	142	17.8
509	142	17.8
510	142	17.8
523	135 +	18.4
525	135	17.9
528	142	17.9

632 Var

2% Para

7.9% 6/4

4% Penta

Transfers OK Below 75% —

903	alcohol	phenolic Resin
529	142	17.9
530	142	"
532	142	"
531	142	"
534	142	19.3
535	136 x	"
536	136	"
537	150 *	"
538	150 x	"
539	142	18.6
548	136 x	17.1
549	142	17.1

632 Var

434	140	63

854 Var

433	115 *
456	155

981 Var

544	150

983 Var

547	136

984 Var

550	152

903 Var is

½% Para

8% 6/4

6% Penta

LIBO

Ratio of Pull outs To Cracked Transfers

Cracked	Pull out
15	
5	
10	
10	
4	
27	
11	
8	
4	
32	
32	
10	
7	
2	
1½	
1	
4	
2	
2	
2	
8	
4	
3	
0	
4	
0	
6	
5	
4	
3	
3	1¼ July 22
1	
2½	
1	
1	
1	4
1	3½

Cracked	Pull out
1	4
1	6
1	2
1	2
1	2
1	2
1	1½
1	1
1	2
1	3
1	3
1	5
1	10

July 22 turned + there was 3 to 8 times more pull outs than Cracked

Lots of Penta

Lot #	Inoc'd	Used up	
28	20.8	July 9	
29	18.4	16	7
30	24.6	22	6
31	18.9	29	7
32	17.8	Aug 5	6
33	17.9	8	3
34	29.4	12	4
35	22	17	5
36	24.3	24	7
37	20.4	Sept 3	9
38	21.9	22	19
39	21.2	27	5
40	21.1	now used	

only so long

C1135

Temp flowing Room

90	Fahr	81-90-93-89-84-88-86 % good Transfers
89	"	65,
88	"	87-89-86-90-92-88-[illegible]-79 "
86	"	9542-87-92-84-88-87-88-83-79-82-78 "
84	"	85-90-87-86-84-75
83	"	90
82	"	90 91-93
80	"	90-90-94-85-96 97-92- "
78	"	90-89-90-90-
76	"	92-95-92.
74		80 —

It seems as if temp of flowing room was of little consequence as long as it is about 76 Fahr -

Room covers Varnish mixed

Aug	1/10 OK Transf	Tent	Humidity Barm	Humidity Sprm				Humidity Barm	Humidity Sprm
1	88	93			9th	69	73-76	61	55
3	92	89-91			10	78	73-79	73	47
4	82	84-82			11	65	75 —	67	68
5	81	80-91			14	76	71 —	64	63
6	88	82-92			15	74	72	67	72
7	77	82-100			16	66	82	46	47
8	73	92-98			17	67	95-100	60	48
10	87	88-101			18	75	103 —	64	31
11	81	93-97			21	83	100	77	36
12	93	90-98			22	83	105-103	51	60
13	84	85-92			23	81	100-109	76	72
14	89	81-92			24	74	109 —	78	69
15	94	90-90							
17	89	87-95							
18	95	80-100							
19	93	93-93							
20	93	91-91							
21	94	89-89							
22	93	83-83							
24	94	83-93							
25	89	77-79							
26	84	76 —							
27	89	74-81							
28	82	77-83							
31	83	77 —							
Sept									
1	85	81 —	77	79					
2	88	88 —	87	82					
3	90	89	81	76					
4	94	83	55	64					
8	92	72-75	73	49					

It looks of it was good to mix Varnish in a warm room say 100 Fahr

No Tee box after Sept 18th

Low % of OK Transfers

903 Var

	Phenol in Resin
529	17.9
530	17.9
531	17.9
532	17.9
534	19.3
535	19.3
536	19.3
537	19.3
538	19.5
539	18.6
548	17.1
549	17.1

6% Penta ½ Para — 854 Var

433	17.1
456	20.8

981 Var

544	18.6

632 Var

434	17.1

983 Var

547	17.1

984 Var

550	17.1

It would seem that Resin with 15@16% free phenol in resin would be best

If 15% then 7% unacted upon Phenol would be added to make up the 22% we always use in Varnish

632 Var has 4 penta 2 para
903 " " 6 Penta - ½ para

High % of OK Transfers

632 Var

Var	Phenol in Resin
382	16.8
383	16.8
386	16.8
387	16.8
391	16.9
394	16.9
395	16.9
397	16.9
398	16.9
403	16.8
406	16
407	16
408	16.6
409	16.6
412	16.5
418	16.5
431	17.1
439	19.1
442	18.4

903 Var

500	17.7
501	17.6
502	17.6
503	17.6
504	17.9
505	17.9
506	17.9

632

443	18.4
446	18.4
452	20.1

903 Phenol in Resin

Var #	
507	17.3
508	17.8
509	17.8
510	17.8
523	18.1
525	18.1
526	17.9
527	17.9

854 Var

385	16.8
389	16.8
393	16.9

903 V

546

Van #	Free Phenol in Resin	
382 To 390	16.8	Average % good Transfer 90%
391 To 398	16.9	" 92%
399 To 403	16.8	88.8
404 To 407	16	88.5
408 To 410	16.6	91
411 To 424	16.5	86.7
425 To 430	17.1	85
431 To 437	17.1	77.8
438 To 441	19.1	86
442 To 448	18.4	89.8
449 To 453	20.1	89.3

Trichlorophenol never tried in Duo Van

It Combines with NH_4 from saturated alcoholic sol of NH_4 to a precip insol in water but sol in alcohol

Trichlorophenol very sol in alcohol

By saturating alcohol with 6/4 & then pouring in strong sol of Trichlorophenol there is no precipitate – it does not take the Ammonia from 6/4 apparently, gives clear solution

Apparently Trichlorophenol will absorb the NH_4 when 6/4 is mixing –

Trichlor is a great & powerful Crystallizer –

Note.

Trichlorophenol strong does not precip Paraphenylenediamin strong when poured into it The solution becomes ~~[illegible]~~ darker – but not very much

None of the ingredients precipitate out Trichloro, 6/4 para,

Even the Trichlorophenolate of Mg 4 does not precip –

Strong sol of 6/4 m cl is precipitd in long silky needles by Hydrochloric + Cheselave not nearly as sol as 6/4. they are not Mg 4 Cl 4 but a true compound with HCl – Dont think more than 5% will dissolve in 145 alcohol

This substance is very soluable in water –

Notes –

I find that Penta treatment after add that Alcohol will take out warm 110 fahr about Will if Phenol pure is added the solute of treatment dissolves but when alcohol is added most of it precipitates out but a large part remains in solution + if filtered off is deep red If now more alcohol is added to clear red solution there is no further precipitation

showing phenol aids greatly to dissolve more penta – if this substance is good then 15% Phenol in Resin or lower will be best then we can use 7% phenol free in the alcohol & this gets more of this substance

CITU

Note

I don't think 6/4 + Trichlorophenol Combine as apparently they Crystalize out seperately but not sure —

The Trichlorophenolate Ntly Crystalizes in pin Cushion rosettes —

Trichlorophenol + Para Rosolic crystalizes together abundantly but not certain

6/4 seems to condense Trichlorophenol slightly —

I note that the Varnish made with Trichlorophenol instead Perit dries slow — also shows tendency to make bubbles —

We need an insoluble Coat of Penta from Michigan — I found if we put pieces phenol in it it semi dissolves, When heated then keep adding alcohol — Keeping almost boiling You can keep on adding alcohol & finally on filtering practically all dissolves & no amount of dilution with alcohol Gold precipitate also — also if phenol Combined with it & then it was put in alcohol — The reason it dont dissolve in alcohol is probably due to fact all the phenol used in Chlorinating part was Chlorinated / Observe the Sol Penta has phenol in it & to this that makes it Soluable = I once tried Penta with 6/4 & found it partially Condensed this

probably proves that there
is free phenol in oil
Petro —
There is a big find —

NY Weather Bureau

Sept	Humidity 8 am	8 PM
1	77	79
2	87	82
3	81	76
4	55	64
5	68	48
6	74	83
7	86	43
8	73	49
9	67	55
10	73	47
11	67	68
12	64	64
13	55	66
14	64	63
15	67	72
16	46	47
17	60	48
18	64	31
19	61	79
20	78	57
21	77	36
22	51	60
23	76	70
24	78	64
25	78	60
26	62	44
27		
28		
29		
30		

Var Lot #	Date Poured	Remarks	Traveler # / 0
382	July 6	Fair 92	92
383A	7	Fair	90
854-385A	7	Vermosh heavy	95 ✓
" 384	7	Plates look good * 80	80
632-386	7	Fair plates	92
" 387	8	Fair "	94
854-389	8	Fair "	92
632-390	8	Fair "	85
632-391	9	Fair "	90
854-393	9	Fair "	90
632 394	9	Fair "	95
632-395	10	Varmosh heavy - fair plates	95
632-396	10	Fair plates	89
632 397	10	Fair "	90
632 398	11	Fair "	94
854-399	11	good "	87
632 400	13	Var Thick plates fair	87
854-401	13	Good plates.	89
632 402	13	Varmosh heavy fair plates	87
632-403	14	Fair plates	90
854-404	14	Varmosh Thin	86
632-405	14	Fair plates	88
632 406	15	Good "	90
854 407	15	Fair "	90
632-408	15	Fair "	92

Lot	Date Poured		
632-409	16	Fair Plates	93
854-410	16	Work good	89
632-411	16	Plates fair	87
362 412	17	" " Var Too Thick nearly all plates patched	92
854-413	17	Var too thin, plates sweat, many breakaways + streaks	84
632-415	17	Fair plates Var Too Thick	86
632-416	18	" "	84
854-417	18	plates fair	86
632-418	20	Var Too Thick	90
854-419	20	Var too Thick	88
632-420	20	Var too Thin	88
632 421	21	" Very poor had steam on all day	88
854 422	21	good plates, followed by night work	83
632-423	21	Poor plates, breakaways —	86
632-424	22	Var dont work right, Little better than yesterday	85
854-425	22	Flocced good, dries good —	81
632-426	22	Very Thin, plates poor, breakaways —	84
632-427	23	Var creases, plates fair —	86
854 428B	23	OK plates fair — N work	87
632-429B	23	Thin - breakaways - 45% look muddy	N work 85 many tailless 87
854 430A	24	Plates good	90
632-431	24	Very good	87
632-432	24	Good	

cm77

Var #	date flowed			
854- 433	25	Four plates	F	65
632 434	25	Var very thin plates very poor	VP	67
854 435	27	Var good	G	79
632 436 B	27	"	G	79
632 437 B	27	" Very good	G	78
854- 438 A	28	Plates good		82
632 - 439 B	28	good		91
632 -440 B	28	Var Very good		93
854 441 A	29	Var good		78
632 442 B	29	Plates fair		92
632 443 B	29	Plates good		93
854-444 A	30	Var Two thin plates good		84
867 445 B	30	plates very good Vuscos 2.30		89
632- 446 B	30	plates good		94
554 448 A	31	"		87
872 447 A	31	Flowed freely plates look good		X
632 449 B	31	Var good		87
873 450 B	31	plates look fair Vis 6.21		X
632 452 B	31	plates good		92
Aug	1			
854- 453 A	1	plates good		89
632 454 B	1	Plates Very good		89
854- 455 A	3	Var good		90
867 456 B	3	plates Very good Vuscos 1.4		95 VG
632 457 B	3	plates good		85

Lot #	date flowed		
878 458 B	3	Var very fine, all plates good, Vis 3.41	84
854 468	4	plates good	82
879 469	4	Var Covers plates good Vuscos 3.90	43
880 470	4	These plates like best we have ever Vis 4.37	87
632 471 B	4	plates good	83
632-472 B	4	"	86
854-473 A	5	"	81
892 474 B	5	Works very good Vuscos 2.31	76
632 475 B	5	Var poor, breakaways + unevely	86
854-476 A	6	plates good	83
899 477 B	6	Works very bad, breakaways —	76
899 478 B	6	Looks bad, streaks + breakaways —	76
899 479 A	7	Plates Rotten — Vuscos 3.37	87
899 480 B	7	plates very bad, had steam on it Vis 4.87	86
899 481 B	7	plates bad had breakaways + streaks	87
899 482 A	8	Var fair -	87
899 483 B	8	Var heavy, flowed slow plates perfect	87
[illegible]	[illegible]	3% breakaways no dimples, window wide open	
899 484 A	10	Vis high — plates not good, breaks + dimples	96
899 485 B	10	flowed bad, streaks dimples, breakaways	93
899 486 B	10	Vis high, but flowed more even, no dimples no streaks, or breakaways	87
899 487 A	11	plates good	G 74
899 486 B	11	"	88
903-489 B	11	Works fine - plates good	94

[1795]

Van #		date (Aug)		
903 -	490 A	12	good	95
903	491 B	12	plates good	81
903	492 B	12	"	88
903	493 A	13	plates fine.	90
903	494 B	13	Van fair	92
903	495 B	13	plates good	86
903	496 A	14	Van good	93
903	497 B	14	"	94
903	498 B	14	plates good	89
903	499 A	15	"	85
903	500 A	17	"	92
903	501 B	17	plates poor	94
903	502 B	17	"	96
903	503 A	18	plates good	93
903	504 B	18	"	93
903	505 B	19	"	94
903	506 A	19	"	93
903	507 A	20	"	93
903	508 A	21	plates fair	94
903	509 A	21	"	94
903	510 A	22	plates good	90
903	511 A	24	Van fair	89
903	512 B	24	Van good, 9 gall Van	dark 84
903	513 B	24	" "	"

							Humidity	
903 -	514 A	25th	Van fair - plates Creeping Thin Cent					84
"	515 B	25	" "					"84
"	516 A	25	Van good					88
"	517 B	25	Van Thin plates fair					82
"	518 A	26	Van very good					82
"	519 B	27	Van good					82
"	520 A	28	"					83
"	521 B	28	Van fair					83
"	522 A	31	good					85
		Sept						
903.	523 A	1	Van good	77	79	90		
"	524 B	1	"			89		
"	525 A	2	Van formed when 1st read but 3 hours after OK -	87	82	91		
903 -	526 A	3	Van fair	81	78	91		
"	527 A	4	plates good	55	64	92		
903	528 A	8	Van Very good	73	49	79		
"	529 B	8	Van good			74		
"	530 A	9	"	67	55	74		
"	531 B	9	good			77		
"	532 A	10	good	73	47	77		
"	533 B	11	"	67	64	83		
"	534 A	11	"			75		
"	535 A	14	"	64	63	60		
"	536 A	15	"	67	72	69		

						Humidity 8 am	8 pm
972	537 B	15	Var Woks fine, plates look good Vis 3.33	63	VG	67	72
973	538 B	15	" " Vis 4.43	35	VG		
903	539 A	16	Works good	74	G	46	47
"	540 A	17	Var good	82			
"	541 B	17	"	80		60	48
"	542	18	"	83		64	31
"	543 B	21	"	83		77	36
981	544 B	21	Var Woks good - not many breakaways	16	$ G		
982	545 B	21	Var dont wok good, gree of many dimples + Set patching to do	86			
903 -	546 A	22	Var woks bad, lots dimples, Lots patching - breakaways, thin Edges	87		51	60
983	547 B	22	Var flowed good, plates look fine Viscos at 70 4.45 Room Temp 96°	70			
903 -	548	22	Var good plates good	65	G		
903	549	23	Var good plates fair	79	F	76	70
984	550 B	23	Var Woks fine, plates look good Viscos 3.23 Room 92 - Var 82	61	VG		
982	551 A	24	Better results from this Lot Var than from Lot 545 B Not as many dimples or breakaways Rosy from thin Edges to good - Vis 3.57			78	64
903	552 A	25	Var fair few dimples + thin Edges or patching				

Notes

Stopped spraying powder
Moore thinks around 8th
Sept find out—

Up to Aug 6th used
2% Para in plate
Varnish—

Used 1% Para from 6th
till 11th used 1.%
from Aug 11th to date
1/2% used

Sept 1 left off old filler started
new 1/2 bags Comp - used
new 1/2 bag till Aug 10
2 bags on 11th since used 3 bags

Notes -

If phenol alcohol Penta residues ~~not~~
used in alcohol alone, bad Rez
Resin added it deadens acorns
as the free phenol of the
resin helps to make it rot—
I mean that which precipitates out on standing after
Also little Resorcinol added
to alcohol aids its rot

It is probably the Resin which
deadens in phenol Benzine
Coats + prevents alcohol
deadening some - If Residues
used in phenol + alcohol —
is treated H of Benzine largest
part dissolves + is precipitated
by alcohol The alcohol is
very red + deadens it now dissolves
more while the Benzine holds
the Tar + floats to top

Might be good way get rid
of Resin Tar—

987 ½ Para 8% 6/4.
No Penta — 1% 6/4
Alcohol 150% Resin has 16.5
free phenol added 5.5 more
10 gals —

This is Reg without Penta

See

987 Var Sept 29/14

770 plates oven #7 Tap coils not
cut out. 7 hours
Var plate inspection

Bubbles	8	Discards
Uneven	13	
Dent	5	
Ruined	1	
Cracked	0	
Dumpled	1	
Chipped	0	
	31	

Var flowed freely - Color green
Creeps a little - few dumples
white edges - plates look good

Commercials

Bubbles 653
Uneven 81

Transfers Var. Lot 555 - blank 842-907
Total Transfd 368
Total OK 155
" Discards 213

42%

Pull coils 91
Var Cracked 107
Mechanical 15

No penta ½ para in the Var

988 - 6 ½ para 8% 6/4 —
5% Alpha Naphtol.
150 alcohol. Resin has
16.5 free phenol added 5.5%
fresh phenol. 220 parts
10 gals made in Open kettle
was there para -

As Naphtol Condenses & there is no
Penta in this - It Count by the
Penta-Selling out that accounts
pull outs /

988 Lot # 5561B Oven 7
Top coils not cut out 7 hours Oven
Var discard Commercial
Bubbles 5 Bubbles 576
Uneven 1 Uneven 103
Dust 5
11

Color Var grey green (loose)
tacky - plates about Look good
Creeps too much, Thin center.
about usual amount of patching up

842-907 Blanks
Transfer 340
Total OK 11
Discarded 329

Pull outs 310
Var Cracked 8
Mechanical 11

[1917]

989 is, ½% Para 8% 6/4
5% Trichorophenol.
no pentā 150 alcohol.
16.5 Trichlorophenol in Resen
added 5.5 more phenol
10 gals made in Open mixer

Trichlorophenol like alpha
Naphthol Condenses a little

989 Lot # 5578 Run 8 oven 7 hours
756 plates

Plate inspection		Comcl	
Bubbles	11	Bubbles	345
Uneven	16	Uneven	360
Dirt	7		
Ranced	17		
	56		

This Var is similar to 987 but lighter in Color plates look good

Transfers —
Transferred 353
OK 205
Discards 148 58%

Pull outs 101
Graded Var 20
Reabsorbed 27

990 Reg Var Except melted all the phenol that is to 6% added in the 6/4 then added right amount of alcohol Then followed in recipe then para 1/2 + 6/4 Reg then add Resin -

990 – Lot 558/13 Van Looks like #903 acts like it only better This Van is fine.

640 Plates 8 oven 7 hour
Top coils not cut out.

Plate inspection
Bubbles 12
Uneven 5
Dust - 2
Raised 344
363 Discard

Comet –
Bubbles 277 .

Transfer – 139 Transferred OK 86 –
Discards 53 –

Pull Scotch 10 –
Ckd Van 41 –
Mechanical 2

62 1/2

Notebook Series -- Notebooks by Edison
Notebook, N-14-09-30

This notebook was used during the period September-October 1914. 1914. It is the third of a four-book series, preceded by N-14-08-07 and continued by N-14-10-04. All of the entries are by Edison, except for some small notations by Sherwood T. (Sam) Moore. The entries pertain primarily to the transfer and printing process involved in disc record manufacture and to the Condensite varnish surfaces applied to record blanks during the process. Included are notes describing transfer and printing results obtained with various experimental varnish compounds, which contained different amounts of phenol, alcohol, "para," "penta," and "6/4." Additional entries relate to experiments by Jonas W. Aylsworth to hasten condensation. Inserted into the book are several loose pages of notes by Edison that tabulate some of the results noted in this book. The notes indicate that Archie D. Hoffman also assisted Edison. The front cover is labeled "Disc = 3." The pages are unnumbered. Approximately 125 pages have been used.

Sept 30 1914

Using raw Penta + Washing
it boiling with 2% NaOH and
~~put out for ...~~
then precipitd with Strong
HCl - got and large amount
The Water portion was
then boiled down to dryness
& HCl driven off — after
thoroughly drying
cleaved and dehydrated as
Combustions Manually
& then 16 tenth the KPt-
Ether Empirical as in
Needles -

Adding Equal % to Reg
Var of alkalone Thoroughly
absorbed. The Percentage
of ~~to~~ determined was at 6d
Alkalone 2nd by Benzol -

For July + Aug over ½ of good
Indentures (Green Light) Last
plates (Loaded Sept 4 —
(Then 3 hole Cups (Laflin Smith Gun)

The plates Nearest and 4th
gave 92½ good but those
(Loaded on 8th & up to
date Sept are Very bad)
65@ 75 ½ mostly pull outs

Another Change we made
in Hole Cups used to change
pulling the Varnish in
Blank powder from a pressing
to pouring it in —

Examining the pull outs
in Indentures I find very
faint Cracks & believe
pull outs start at fine
Shear Cracks — if so
then the trouble due to
pull outs is due to blank
not to Varnish, but

Thought this would impossible till I discovered these fine Cracks at every pull a cel— Thick veneer dont work— Varnish is unequaly distributed on powder by pouring it on

Try 2 lots req Var 903 two bottles dewhis — one had Some Alcohol saturated with ammonia put in & the other equal amount Alcohol no ammonia They did not act much different,

Tried 2 with Req Resin in alcohol saturated with ammonia work as good as Req + less Bubbles no pores or ridges thick comes off easier

Sept 30/14

996 Req 903 Var - Except 7.8% of 6/4
instead of 8% - Resin V6.5
Lot 566B Room Temp 90 Feb Var Temp 80°
Visco 3.28 Varnish works good, plates look
fine, Varnish thickens after flowed on plates
R

Transfers - Req Schedule -

Made 302
OK 212

Cracks 34
Pull outs 54 | 90
Bird
Mechanical 2

90%

Rept 30/14

Req Var to check 997

Pull out IIIIIII not fried 2d qual IIIIII
OK IIII not fried IIIII R

4 OK Transfers - 8% 6/4
9 pull outs -

30.7%

997 Req 903 Var except 8.2% 6/4
instead of 8%
Lot 587 B3 Room Temp 93° Var Temp 82°
Visco 3.47 Varnished flooded freely
Var creep but center coat not too thin -
plates look good

Room 16.5 freq phenol

Req Schedule
316 made
131 OK
185 Rescanded

Cracked 21
Pull outs 164
Burned

41%

Dept 30/14

998 Req 903. Var Except 8.4 % 6/4
instead of 8% Room 16.5 plenum
Lot 56813 Room Temp 95° Var Temp 86°
Visc 3.19 Varnish creeps, not much
patching up - Plates Look good

Transfer 324 made
OK 180
Dis 144

Pull out 36 55 %
Cracked 107
Mealround 1

Sept 30/14

999 - Reg 903 Var Except 8.6/6/4 instead of 8/6 Resin 16.5 phenol Lot 569/13 Room Temp 98° Var Temp 84° Visco 3.21 Var dient creep much plates look fair, Lots Thin Edges.

Resin -

Transferred	274
OK	157
Dis	117

Pullouts	14
Cracked	77
Mechanical	26

274 | 157 (57) 13 00 18 29

Sept 30/14

1000 Reg 903. Van Except 8-8½ 6/4
Recen 16½ Redu -
Lot 570 Room Temp 96° Van Temp 84°
Vasco 3.15" Van Sleeved freely, Crepe,
Thin edges + few dimples, plates fair

Transfer - 323
OK 214
Dis 109

66

Lifted 1
Pull outs 25
Cracked Van 83

Dept 30/14

At same Time we put in same oven
903 Reg Lot 565 as a Check
to Thr Expts with 6/4 def % -

Dept 30/14

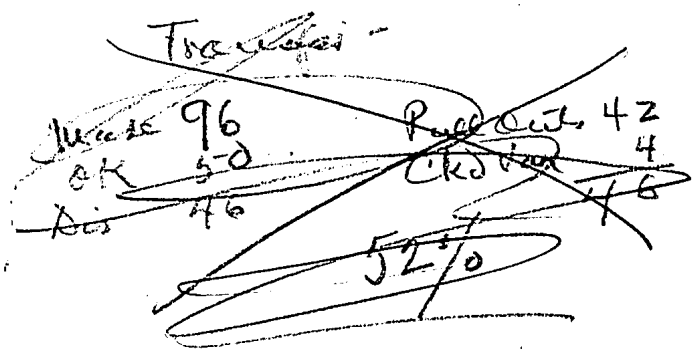
1001 Reg Van 903. Except 9% 6/4
Room 16.5 Changed
Lot 5713 Room Temp 90° Van Temp 84°
Viscos 3.15 Van Flocced freely
Thicker on some parts of plates. Creeps
unevenly — plates fair —

Transfer 312 made 54.5%
OK 170
Dis 142
Pull outs 14
Cracked 128

Transfers
Made 72
OK 42
Pull outs 2
Cracked 28
00

Thes Cage full outs but
Handled it very well
made —

1002 Req 903 followed acd
was there a single bag
in Dair — Reseen 16.5 Interplant



Transfd 358
OR 232
Dis 126 -

64%

Pull outs 105
Ckd Van 21

With Req Van. 102 transferred handling
at Req 15 men 100 lbs steam 500 lbs power
also another Cat head 20 men -

Req 15 min 24 plates 160K -
6 pull outs 2 Crooked Van

20 min 24 plates 150K
8 pull outs
1 Mechanical

100 grms phenol 5 grms 6/4 long glass tube in cork left flask upright on hot plate.

Does not show any signs of condensation or thickening after 60 hours -

100 phenol 10 grms 6/4 after 60 hours thickens some + gives a Resin -

100 phenol 15 grms 6/4 60 hours is about right Condensation. Very thick Molasses like + pours all out OK

It could require 16 To 16½ to produce same amount in 10 hours & thick -

100 grms phenol + 20 grms 6/4 fused & went solid in 2½ hours - probably for Very 18 To 20 grms 6/4 should be used

Note, If Formaldehyde 6% added to a water solution of Paraphenylenediamine It gives a very fine bulky precipitate This if dry does not show the slightest sign of reacting or of coming if put right on the hot plate.

Also this precipitate is insoluble in boiling alcohol —

This reaction may account for Para's action in Venereon —

Its real Sol in reaction or Benzol — ? ?

If Paraphenylenediamine is dissolved in alcohol formaldehyde does not precipitate anything But when I add water and the precipitate appears

This caused show that if there really is 22 grms of Free Phenol in Resinol added we ~~should~~ use up 5.3 grams alone for phenol leaving only 2.7 grms to harden the resin —

Note, This Combination is real in Hot Phenol ? ?

But pouring on dish a very slight sediment separates probably impurities in Para — after free phenol smoke stops coming from dish I notice sediment readily dissolves so its OK if it does the reverse

Here is a Cure - Took pure Phenol put in Bottle 6/4 could get in Hot & by shaking - poured out on butter dish right on hot plate

Poured in 2 dishes, in one put in a little para - none in the other —

Both started smoke Green Phenol distilling off —

Soon the dish with para stopped distilling off Phenol, & turned Color & form into a Varnish

While the other. the Phenol all distilled away & left Nothing but Mixed white Crystals of 6/4 in other words

Para in Varnish prevents great loss of Phenol in oven & hardens plates

When put on hot plate crystals redissolve.

Very Good -

This is a very striking & Important Experiment

After ½ hour the phenol 6/4 Para is thick again on hot plate butter dish but does not seem to want to harden Enough, to get more 6/4 in it until a big increase. I Think to use mixture of pure phenol phenol with mixed recrystallisation to get Enough 6/4 in

I will try ½ phenol & ½ alcohol

When ½ + ½ is tried the Evap of alcohol throws out 6/4 in crystal form + its rig — no para —

Dried Phenol only slight alcohol This also throws out 6/4 when para put in Even worse

Think got too much 6/4 —
No I am mistaken it Phenol
Ether crystd out getting cool
by Evap of Alcohol on boiling
right on hot plate open clear

Both with + without para
when put right on hot plate
phenol deposits off -

Another bug with phenol +
but little formalin -
Para precipitates out,

Also same thing when
formol HCl crystals from
pouring formaldehyde into
alcoholic Para, used
in place of 6/4 —
precipitates out even
worse than carbon
6/4 only used

There is no doubt but with either 6/4
or formol HCl - addition of para preserves
95% of the phenol from Evaporating
in little beaker dish right on
hot plate,

6/4 seems more favorable as it
dont precipitate much para
out,

6/4 alone nearly all the phenol 95%
Evaporates + escapes condensation
which a pinch of para in the
Duplicate pair saves 95% +
it recrystallizes —

I note that the formol HCl without
para 1/2 recrystallizes + dont dissolve
+ recrystallize same when placing
6/4 phenol all gone,

I rather think formol HCl is good
without para, perhaps wants
more after + but it may not be
as good as 6/4 with para —
am weighing out to make definite
Experiments —

Oct 1/14

Dutch Chem

by hot soap method of determining free phenol in Rubin gals

# 625	626	627	628
81.4% Rosin	83.4	83.5	81.8

With drawing in alkali + precipitating

got			
82.1	84.2	84.7	81.6

No 1

25 phenol
5 grms 6/4
250 mlg Para —
20 grms alcohol.

This Reason we lean in back Chem 2 or 3 — + no after — 2 hour cut equivalent back No 2 2nd + No 1 3rd —

I had to use alcohol to get clear solutions

No 2

25 grams Phenol
5 " 6/4
1/2 " para.
20 alcohol dilution hot,
not ready —

Unlike No 1 more para caused
the phenol to go solid more
quick than 250 mlq in
flask before I was ready
to pour on dish —

This one given as hard
Resin + the largest in
bulk — This is almost
as hard as Raq Hoffs
Resin —

994 — 80.3 Resin 19.7 true phenol in it.
2.3 Phenol added Lot 563 B
8% 6/4 1/2 para 6% Resin
based on actual amount of Resin
1.45 D'Heat al — 3 gorants made

Flocoat 9/29/14 pm room temp 68°
Var 68° Visco at 70 5.01
Used roller — patch every plate, dimples
breakaway, Uses 2 layers

Oven — 1 Bubble 20 — Ducato
30 Couch — Bubble —

Transfers 15 made 7 OK 8 Dis

3 pull outs
5 Ckd Var 46%

995— 84.6 Resin 15.4 free phenol
6.6 free phenol added -

8% 6/4 ½ para 6% Peala —
Based on actual amount of
Resin 150 Cleaked 3 gal Var

Flowing — 9/29/14 room temp
88° Var 82° Vinac 5.15 —
Worked like 994 — no better —

OVEN 34 Bubbles Dissolved
Cancel 11 — Bubbles —

6 Transfd —
4 OK —
2 Dis —

1 pull out
1 Mechanical 66%

991 — 560 lbs
Req Van (903)

Head room contrary 15.4 free phenol
added 5% phenol 10 gals made
open kettles

Oven — Rubbers 5
Knives 3
Faced 19
24 Dozens

396 Comet Cookies

Transfers - 282 made
216 OK
66 Discards

Pulled out 2
Cracked Van 62
Medium 2 76%

Sept 9/29/14 - (cont)

993- 562 Lot 903-

Rem 19.7 freeboard added

5% freeboard 5

Hoffman - Vasco 5.19 Jump V 78
Thompson 6.00

Oven- Bubbles 9
Uneven 14
Dirt 6
Raised 54
83 Dns

Loom 4 - 4 hrs

537 Loaded

Transfer ~~Loss~~ 269 - Inspected
215 OK
54 Dns

Pull outs 25
Cracked Van 37
Mechanical 2

79%

No 4

25 phenol
5 6/4
20 alcohol no para

All 1 2 3 4 + 5 in dish
on asbestos at 445 pm
in 5 minutes the phenol
in 4 + 5 with para
had crystalized out with
6/4 – whereas No 1 2 +
3 with para were
clear in 5 minutes
after all the Nos 1 To
5 had gone crystalin +
dry from Evap of
alcohol ↗

No 3

25 phenol
3 3/4 gms 6/4
20 alcohol
1/2 Para –

I now put dishes from asbestos
right on the metal of hot plate

No 3 is only one that for last
10 minutes to all liquefied

Phenol is dividing off of alc

It looks like it is going due to
low 6/4 + high para +

At 5.12 or 27 minutes after
pulling on 1 2 + 3 are
clear while 4 is nearly
dry + crystalized + 5 all
phenol practically divided
off –

5

25 phenol

3 3/4 6/4

20 alcohol no para

Nos 4 + 5 are hopeless must have para to hold phenol from coming out in ether

I now take flasks containing Nos 1 to 5 + add 5 grams of water to each

Nos 1 + 2 were solid

When cold No 3 liquid No 4 solid + No 5 liquid

When the 5 grams of water were put in all the solid except 4 became almost instantly liquid & clear phenomenon!

No 4 only lagged, some cry not quite dissolved —

Took all off — 4 + 5 ng

1 2 + 3 solid & clear looks good — No wonder we need para —

at 530 pm Oct 1/14 pour 1 to 5 with 5 grams added

Water (The mix – butter plates on 1/16 thick asbestos on hot plate –

All but No 3 went crystalline at 5 45 put right on hot metal –

Not as much smoke of phenol off the water Expt.

~~0/Bar~~ Water Expt 1 2 4 3

Clear & resined –

4 crystals & phenol apparently dissolved off – 5 1/2 Cry 1/2 liquid took off – acts about same as of no water, not quite as good, and amount of Resin is less say 20% No 2 being greatest amount. This shows that Water is not dangerous apparently –

Remember Water was put in after I had poured one set plates + therefore must be equal to 7 grams or 35 gram of water to 100 alcohol.

I now add to the balance of the mixtures in 1 to 5 after having poured out 2 rounds – or about 1/2 I add one gram of Penta which I dissolved out of E I penta by alcohol which was original Rees Penta remarked or treated by Hoffman –

The phenomenon about this Expmt is that I cant see any smoke from any it appears as if Penta held phenol but possibly alcohol has now gone + must have gone crystals + not Clear + Water cell now

stand to go off & will get Smoke & phenol will go —

It may be an asset if there is much water in Alcohol & Resin — that the water will hold back ~~the~~ phenol from Evap sat'd to temp (wont rise above 212 until the gone & by that time phenol will be more syrupy & non Volatile

It clears on all but #4 after water gone & smoke is very small compared to the others, 1 & 2nd Rounds,

It certainly looks as if Penta helped Para to hold phenol in Varnish till it got non Volatile

Took 1 2 & 3 off Thick room not fused — Thicker than Either Round 1 or 2 — & Best yet yield slightly better than any —

Even No 4 without para is a resin but more than ½ probably ⅔ has distilled off — towards end it bubbled frothed, No 5 is smoking but unlike the other 2 stages is clear — took No 5 off no resin — yield comparable to #4 — etc —

3rd Round (Penta) — 1 & 2 hard — #3 soft — Very black

Apparently anything that will hold phenol from distilling out of resin till it gets to the

Non Volatile state is good—

Paraphenylenediamine is poor, Excellande the best substance its action is wonderful

Next Comes Penta. which is only moderate as compared to Pheni,

It may also be allergenic beneficial—

Moore Expt No 1 on Transfers—

Reg Var 903— Lot 565 B

Transfer Schedule
5 Min at 500 Lbs instead of the reg 15 min at 500—

12 Transfers—

Pullouts IIII IIII II 00%

Horrible pull outs—

Moore #3

Req -

Req Schedule —
15 Mcm at 500 lbs

Pull outs III
OK IIII IIII

Evidently over
pressured schedule to
old beats,
This will cause
pull outs

Moore #2

Req Like Moore 1
10 Mcm at 500 Lbs

Pull outs IIII IIII
OK III

Killed but
better than No 1 Moore -

Oct 1/14

Moore #4

600 plates washed & set aside for 24 hours & 600 plates washed & used right off - Req 903 Var Lot 599 -

Used right away

Heed 24 hours

Treated	287	Transfd	288
OK	165	OK	178
Dec	119	Dec	110

Pull outs	100	Pull outs	100
Cracked Van	11	Cracked Van	10
Weakened	8		
	119		110

Transfered both Day & night

It sent the plates Evidently-Thick Coarse pull outs -

Contamination of E Exposed with Condensory phenol - Neo flasks replace up numbered 6 7 8 9 10 -

No 18 Edison

10 I think

25 grms Phenol.

5 " 6/4

250 Mlg Para

1½ grms Penta got from Raw Penta by Alcohol after crushing E No 1 -

No 6 Edison

25 grams phenol
3 3/4 " 6/4
1 1/2 " Penta -

No More to Concentrate & Co
Resin 75@60% left it
shows penta acts sweetly
as a substitute for Para -

Edison No 7

25 grams phenol
5 " 6/4
1 1/2 " Penta -

Couldnt get this to dissolve
all in the phenol although
very hot it wanted
Cyclohexyl's out all
the action denatured
to a Cream

It wont stand so much
6/4 #6 just stands it
+ is the limit
Whereas with 1/2 para
Everything so fine -

Edison No. 8

25 grains Phenol

3 3/4 " 6/4

1 1/2 " Penta

1/2 " Para

No 9 Edison

25 grains Phenol -

5 " 6/4

1 1/2 " Penta

1/2 " para

9-7-10-6-8

Notes, ~~Same~~ 6 7 & 9 + 10 on asbestos 11 pm —

I should measure off the amount I put on each plate,

9 10 + 8 right on hot plate dont crisp or smoke + are perfectly clear at 11 12 -

7 is crisping some + Crystals at 6 is crisping slightly + smoking (a bit).

Remember I put no alcohol on the Expmt like I had on 1 to 6 -

at 1120 pm -

9 10 + 8 are seconds Thick — 8 is the Thinest

7 still Crystals - 6 clear - no ring.

as I had difficulty to mix 7 + 6 - 7 being impossible + 9 10 + 8 mixed OK -

Evidently Penta Para Causes 6/4 To dissolve good + in their absence — 6/4 Crystallizes out.

This is another important fact + explanation;

as I had more trouble with 1st Lot with Para ~~to~~ get all the 6/4 To dissolve although Para present I have had with this Lot, Evidently Penta helps To dissolve 6/4

Oct 1/14

Took them all off at 1135 pm

I noticed when I was heating this bunch with corks in two of them blew corks out although there was no alcohol — There must be some reaction making vapor or gas — probably alcohol in the paraffine but it was small —

I note that No 6 with no para is the hardest resin while 9 10 & 8 are much softer, that must be due to fact that the 6/4 dreadnought dusted off like it did in No 6. which having much less phenol got a bigger dose of 6/4 & got harder

No 7 is not a resin but a mass of crystals probably 6/4 (where as #9 had as much 6/4 as 7 gives big crystal resin

Same as 6, 7 & 9 & 10 — but to remaining material added 10 grms alcohol to each — all clear

8 9 10 7 6 in order

8 is 1st to boil — on 12 Midnight on alcohol —

When alcohol is used it creeps badly up to 2 edge of dish — not as when no alcohol except some Crisp where no para used

At 1207 or 7 min after pouring in dish the asbestos 8 & 9 are rough as well as 10 8 & 9 about same 10 not so much

#6 No rain - a drop on cold glass shows phenol crystals
+ #7 is still all Crystals
phenol + 6/4 Cry

at 1225 am take off -
8 has no bubbles
9 some
10 the most
7 all Cry
6 clear no bubbles

There is doubt about which is 10 as I have 2 #8's

7 all Cry + Smoking Even after take it off

at 2 pm 8 9 + 10 are liquid with flasks
(12) The remainder not read while 6 + 7 are Crystalmt Sol

Emulsified Hoffman Resin sticks is hard enough to stand the Reproducer all that it needs is to fire it just a little to stop brittleness —

Think we want to keep our 6/4 low + use 2% para
4@6
+ ~~5~~ of good Penta of Even quality -

Assembly 7.5 @ 7.6 6/4 with 2 para will do, Even low we have = Expect Coming Down with less than. 7.8% 6/4 -
as 7.8 gave 70% good Transfer with only 1/2% Para Think 7.4 will do if use 1% Para

11-12-13 Remarks —
Only # 11 was clear
12 & 13 had lots undissolved
Crystals 12 the worst
big sediment,

Evidently para is incompatible with X — precipitates

after pulling on metal
of hot plate / No 11 has brown
tarry Crystals —

Notwithstanding Crystals
Etc all have formed resins
at 1.35. rather thin —
& apparently all the Crystals
are disappearing — & solutions
getting clear,

See next page

On at 1,15 am

E 11

25 phenol
3 3/4 grms of X Crystals made by
adding HCl to 6/4 in Alcohol
10 grms Alcohol
Yield of resin 6.100 grms

E 12

25 grms phenol
3 3/4 X —— see # 11
1/2 gram Para —
10 " Alcohol
Yield 6.550

E 13 - 25 grms Phenol
3 3/4 grms of X see # 11
yield 1/2 gram Para
7.100 1 1/2 " Penta El.
10 gram alcohol

11-12-13 - Continued,
Considerable smoke coming
off 140.
Evidently X is not worth
much for our purpose
not as good as 6/4
Naturally additional results
off Mesh will get thicker
All clear - Well let them
play all night & go
home —

½ 11 to handset 12 to after
+ 13 little after then 12
but close shaves apparently
12 hrs spread each week

1003 – 574 Lot.
Reg Van Except Room 20.9
5% free phenol – 1
10 gal –

Transfer 288
OK 139
Discard 149

Lot 574 #3 Room
92° Van 82° Vis 3,47
Wks OK after not counted per
Vain streaks, mottled
plates good –

Pull outs 103
Cracked 46.

48%

Oven – Bubbles 9
Uneven 7 } 18
Dust 1

Comal
none reported

1006 – Lot 577 –
Reg Van 7.6% 6/4 undercut
of 8 –

96 made
20 OK

Pull outs 66
Ckd 5
Mech 2

Room 16.5 free
phenol. 5.5
½ para
7.6% 6/4
6/8 Pasta –
125 cal –

21% —

Oven Bubbles 8
Uneven 5 –
Dust 1
Ramed 6
20

Full pressure report
Transfer 315 –
OK 166
Dis 149

Comal Bubbles 438
Uneven 192
52%

Pull outs 118
Cracked Van 29
Mechanical 2

Remarks to date Oct 2/14

1 Its not the Ovens
2 " Pressure or schedule
3 " More or less free phenol
4 " More or less 6/4 in relation to free phenol -
5 " Not varying temp of mixing or flowing room -
6 = Think almost made 10 gals a only Extract Paula by alcohol leaving no phenol -

Oct 2/14

We have tried a lot of Chemicals to hasten Condensation & Under these conditions the hardness at 1-16 is this -

%		Hours	Remark
—	Plain Varnish	93.	
3	Paraphenylenediamin	12	
2	Oxidized "	25	
4	" "	15	
4	Anilin Hydrochloride	25	
2	"	36	
2	Paraphenylenediamin	20	-
4	Phosphato-anilid (Phosphoxyl)	18	Very small amount dissolved
4	Benzidin (Base)	15½	only ½ dissolved
4	Ortho Tolidin	22	
4	Methylene-Phenylendiamin	20	only little dissolved
4	Para amido ortho Cresol	19½	
4	Para Anisidin	26½	
4	Toluidin (Base)	37½	
2	Anilin Oil	29½	
2	Succinic Acid	37	
2	Anilene Oxalate	29	
2	Xylidin	30	
4	Betanaphtalamine	39	
4	Parachloroanilin	38	

10/1 14

1007 Export Vacuum
10 gal — 2% Para 7.8% 6/4

Resin -

OVEN Bubbles 8
Uncoven 8
Dirt 2
Ruined 30
Dumpler 1
} 49

Comal Bubbles 547

Flowed 1st/14 - Rm - Room Temp 90
Vacc 94 — Vis 5.20 Van f Comal
freely good body plates
Coarse good

OVEN — 590 plates · 587 & 13 left Van
Top coil. Cut out

Bubbles 8
Uncoven 8
Dirt 2
Ruined 20
Dumpler 1

Comal 540 —

pull outs at outer edge, very small - Cracks very small margin Cracks

Transfer. 205 Transferred
150 OK
55 Discard

7/3 %

Pull outs 20
Cracked Van 32
Defects 3

Varnish Req Different % of 6/4

% 6/4	% OK Tum	Pull Outs	Cracked	
7.6	21	66	8	
7.8	70	54	34	
8 —	73			Req
8.2	41	164	21	
8.4	55	36	107	
8.6	57	77	14	
8.8	50	0	5	12 months
9.0	54	14	128	

Note

				Total Hrs phenol	% OK Turn	Cracked	Pull Outs
991 = Resin	15.4	5 Extra Phenol		20.4	76	62	2
993 = "	19.7	"		24.7	79	27	25
1003 "	20.9	"		25.9	29	12	46

Note as phenol goes up
Cracks diminish + pull outs increase

Hoffman well dups all 3 using 2% para instead of 1/2

• 991 + 993 Req 903 Var - 1/2 % para

Req 9% - used 2 months

1010 B Check on Sprayed 6 Panels
1010

100 Transfers made
75 OK
25 Dis -

Pull Coats 18
Ckd Varn 7

1010 - Blank Expt. Varnish 1% Para
Sprayed - process of curing

100 Transfers made
78 OK
22 Dis

18 Pull coats
4 Cracked

1008

Trez phenol up to 25% instead of 22%
Sicq amount 1% Para —
Lot 58013 Room T 88° Vant 84°
Vis 4.32 10ks OK Mettle. Vaino Creaks
Thickens after flowing - plates do a lipoid
OOEW - Bubbles 2
Uneven 122
Dirt 3
Round 8
} 135 — Council 512 OK

Transfers 216 made
160 OK
56 Discard

Pull outs 39
Cracked 17

74

Hoarhoreltaan
does not precap anything
Para or 6/4 cut off
cracked so it can
be used —

1005 — Lot 576B
~~Bran~~ Reg Var except 7.7 6/4
unleach of 8%

Resin — 16.5 free 620 pentosi
Given: Soft Var 16 Rawal 2 } 31 hexosi 3.97
Butter 8 Dumpal 1 unsom 192
unsom 1
Dirt 0

flowering room 96° Van 82° Vis 3,45
Van thighteens on plates after Cawar
Mottle, Vain cheaker-plates look good

Transfers made 273
OK 85
Dis 188

Pulls 162
Crudes 26 - 31%

Transfer plates Baked over 7 hours
total 14 hours —

Transfers made 22
OK 10
Dis 12

Pullouts 12 45%

	Gunal	
18	31.5	S 4/7/14 F 4-15-14
19	36.3	S 4-17-14 F 4-25-14
20	35.9	S-4-25-14 F 5-5-14
21	16.2	S-5-5-14 F 5-16-14
22 - Spcl	4.8	S 7-5-7-14 F
23	17.3	S-5-16-14 F 5-25-14
24	17.7	S 5-25-14 F 6-4-14
25	19.8	S-6-5-14 F 6-13-14
26	24.2	S 6-13-14 F 6-22-14
27	17.6	S-6-22-14 F 7-1-14
28	20.8	S 7-1-14 7-9-14
29	18.2	S-7-9-14 F 7-26-14

Paula Sals Salvability in Alcoh

	Insalubrle	
7 =	21.3	Start 1/17/14 finish 1/29/14
8	26.5	Started 1/29/14 finish 2/11/14
9	26.8	S 2/11/14 F 2/21/14
10	21.6	S 2/21/14 F 3/4/14
11		S F
12	18.9	S 3/4/14 F 3/15/14
13	23.9	S 3/16/14 F 3/19/14
14	22.9	S 3/12/14 F 3/16 "
15	22.6	S 3/19 F 3/29
16	Spcl - Edited Salvable	S-3/26 14
17	17.8	S 3/30/14 F 4/9/14

30	24-6	S	7-16-14
		F	~~7~~-22-14
31	18.9	S	7-23-14
			7-29 14
32	17.8	S	7-30-14
		F	8-5-14
33—	17.9	S	8-5-14
		F	8-8-14
34—	29.4	S	8-8—14
			8-12-14
35	22-	S	8—12—14
			8—17—14
36—	24.3	S	8—17—14
			8—24—14
37	20.4	S	8—25—14
			9—3—14
38—	21.9	S	9—3—14
			9 22-14
39—	21-3-	S	9-23-14 Spent 9/22-14
			9-26-14
40 -	21.1	S	9—28—14
		F	10- 3—14
41—	22.9	S	8—3—

Our Denatured alcohol is 100 gram 5 wood alcohol —

190 proof or shiddaker than 95%

Hoffman Cap, most 6/4 thermometers you can get in our alcohol is 22% we use 8%

Sample Req Run Oct 1/14 unpacked

903 Van Lot 559 — 842-907
1 3 4 6-7-8 oven & hoses

Total Processed 5281
OK 3740
Discards 1541

Lift, cracked 1
Pull out 1292
Cracked Van 155 —
Mechanical 93

70%

70.7 weekly

1008- Ream up to 25% instead of 22. 1% Ream 16.5 pre phenol

7 hours —
Transfered 312
OK 211
Dis 101 67%

Pull Outs 62
Cracked 39-

Lot 579 A Room T 92° Van 87
Vis 3.28 Van wks good plates good

1011 — Ream 16.5 2% para
7.9 6/4 - 4% of Saponified Pentra
Hal Soap in addition - 3% Lwol -
7 Hours.

Lot 583 B Room 89 Van 78 Vis 345
Van streaks, Olive mottled
Creeps - plates look good

Transfd 306
OK 200
Dis 106 65%

Left Ched 2
" Edge 2
Pull Outs 66
Cracked Van 36-

1040 pcls

1012 – Room 16.15 – free phenol
1% Para 7.8 6/4 Mixed alcohol
+ Resits together unfiltered on press. Then added phenol –
6/4 para + resin – Room Vis 1.56
16.15 free P 145 al Van Vis 403 Room T 100
flow room 94 Vis 505
This is Expmt to prevent phenol from developing out Exc
Stuff from Pefeka 7 Hardness

Lot 5866 B Room T 94 – Van 84
Vis 505 – Mottle Vein cracks
plates Loark good

Transfer	297	Oven		Comal
OK	234	Bubbles	3	Bubbles 159
Dis	63	Uneven	6	Uneven 448
		Dirt	1	
Pull Outs	45	Removed	6	18
Cracked	15	Dimples	2	

99.8%

Duplicate 1012 B
Room Vis 2.11 16.6 Room Al 142 Van Vis 4.55
Room T 95 – Flowed 10/7/14 Room 85 Vis 5.00

Transfer	304	Pull Outs	101	53%
OK	162	Ckd	41	
Dis	142			

plates – Mottle – Vein cracks, breakaways, Thin edge plates Loark good

1013 – Duplicate of 991 Van
Except 2% Para instead of 1½%
Room 15.2 free phenol

Lot 5845 B Room T 94 – Van 80
Vis 4.45 – Thicker after out on plates Loarks good –

Transfer	323
OK	248
Dis	75

76%

Pull Outs	46
Cracked	29

1018 - Spec - Lot 591 7 hours
Resin 16.6 fresaphenol 1% perma
7.8 6/4 - 10 gal - 8% Penta
#41 Penta -
Room T 92° Var 84° Vis 4 45"
Marble, Vein, Cracks, Creeps, Thickness on plate - plates look good.

Transfer 100
OK 75
Dis - 25

75%

Pull outs 10
Cracked 15

Oven Bubbles 3
Uneven 2
Raised 30
Dimples 1
} 36 Dis

Corner
Bubbles 337
Uneven 224

1019 - Lot 592 -
Resin 16.6% fresap - 1% Perma
7.8% 6/4 - 2% Penta 10 gal
Oven - Bubbles 10
Uneven 8
Dirt 4
Raised 5
Dimples 2
} 29 -

Corner
Bubbles 244
Uneven 368

Transfer - 100 -
OK 72
Dis 28

Pull outs 18 72%
Cracked 10

1020 Lot 593 — 4 hours

16.6% precipitant in Resin —
2% Para — 80% 6/4 —
No Penta — 10 mC

Open Bubbles 2
Uneven 9
Dirt 2
Dimples 2
} 15 Dis

Comel
Bubbles 4
uneven 497
OK 200

Transferred 100
OK 45
Dis 55

45%

Pull outs 46
Cracked 9

982 - 1st one HCl Expt 1/8% 903 Van
Transfer 274
OK 236
Dis 38
86% - (38) Penta

Pull outs #1
Left Ckd 4
Ckd Van 33

982 B HCl. New Penta · New resin
Transfer 507
OK 293
Dis 2092
(39) Penta

Left Ckd 11
pulls 1830
Ckd 209
Mech 44
58%

982 C only difference is different Resin + New Lot Penta — #(41) lot penta

HCl Expmt

Room 89° Van 84° Vis 4:40 needle Van checker. Requirement of precleaning Needles not many dimples or breakthroughs Plates Look good

Transfers — 318
OK 292
Dis 26

free residue

HCl + 6/4 Compound only Little Dot Oberchol quite sol Water

91%

No pull outs
Cracked 26

Open — Bubbles 1
Uneven 3
Dirt 2
Raised 6
Dimples 2

Comel
Bubbles 462
Uneven 200

Comel — 240 hard fine bubbles
396 uneven

981 B+ ✓ No 41 Penta

$FeCl_3$ Expmt. Only difference between this + old one is different room + new Lot Penta #41 Lot Penta

Room T 90 Van 84 Vis 4.10

Marble, Van Streaks, not much pebbling

Transfers - 303
OK 272
Dis 31

89.7%

OVEN Bubbles 4
Uneven 6
Dirt 6
Raised 6
} 22

Comal
Bubbles 292
Uneven 366

Pull out, 4
Cracked Van 27

OVEN Bubbles 3
Uneven 4
Dirt 2
Raised 19

Comal 333 had few bubbles
272 uneven

All 10 gal lots made in Oven Recipe

1st 981 - $FeCl_3$ - 1/4% 903

Transfers 300
OK 49
Dis 251

Left Old 20
pull out 231

16%

1016 - Lot 587 4 hour oven
Reg 903 - with Double Co coated old Penta that Hoffman has had for long time - Room 1616 10 gal

Transfers 282
OK 243
Dis 39

86%

Pull Outs 9
Cracked 30

OVEN Bubbles 25
Uneven 10
Dirt 3
Raised 7
45

Comal - 563 had few bubbles
no uneven

1018 Resin 166 pre-shrunk 1% Para
4.8 4/4 8% Penta -
10 gal Lot 591.

Penta N° 41

- Oven Bubbles 3
Uneven 2
Raised 30 } 36
Dimples 1

Comal
Bubbles 337
Uneven 224

Transferred 280
OK 203
Dis 77

72%

Pull Outs 31
Knicked 1
Cracked Van 45

Regulars with 41 Penta

Transfers 285
OK 224
Dis 61

78%

- Pull outs 26
Cracked 33
Mechanical 2

1019 – Lot no 592 No 41 Penta –

Resin 16.6 Precip – 1% Para 7.8% 6/4

2% Penta.

OOEW Bubbles 10
Uneven 9
Dent 4
Ragged 5
Dimples 2
} 29

Transference – 306
OK 220
Dis 86

71%

Pull Quick 59
Ckd Van 27

Comal
Bubbles 244
Uneven 368

1024 – Lot 598 – 2% Edwoon
Phenylhydrazin – 3% Para 7.9 6/4
Kept Cold, 10 gal –

OOEW Bubbles 7
Uneven 14
Dent 10
Ragged 1
Dimples 19
} 51 Dis

Transference 333
OK 140
Dis 193

42%

Pull Quick 89
Ckd Van 104

Bubbles 19
Uneven 448
OK 200

1025 Lot 599 — 30 Edenvar
250 kelg glacial poloxamer
16.6 Resin — 2 parts 7.9 6/4
4% Penta 1% water —
10 gal

OVEN — Bubbles 1, Uneven 4, Dirt 2, Raised 2, Dimples 1 } 21 Dis —
Bubbles 27
Uneven 409
OK 200

Transferred 316
OK 175
Dis 141

55%

Pull outs 76
Cked 65

1022 27 Edenvar Var Gum Dammar.
[redacted] —
16.6 Resin free — 2% Parts 7.9 6/4
3% gum Mixed Gum Dammar with alcohol & afterwards add balsam oil —
10 gal water in Open No Penta.

Oven Uneven 5
Dirt 1
Raised 2 8 dis

Bubbles 13
Uneven 469
OK 200

Transferred 340
OK 288
Dis 52

84%

Pull Outs 9
Cracked 43.

1021 – Σ 2% Alpha Naphthol

Resin 16.6 2% Para 7.9 6/4
2% Alpha Naphthol
10 gals in Open

Coated 627 Uncoated

Transfd 314
OK 184
Dis 127

59%

Pull Outs 93
Ckd Van 34

Reg Van made in open
(903'V)

Transfd – 348
OK 285
Dis 63

81%

Pull outs 54
Ckd Van 7
Mechanical 2

1020 – 16.6 Free P in Resin – 2% Para
8% 6/4 – NO penta –
10 gal in Open Mixer

716 places
Coated
Uncoated 497
Bubbles 4
OK 200

Transfd 350
OK 208
Dis 142

59%

Pull outs 82
Ckd Van 60

1032 – 16.6 Resin 7.9 6/4
¼% Phenylhydrazine –

Transfd 100
OK 17
Dis 83

17%

Ckd Left. 10
Pull outs 7
Crushed 66

1021 – E 27. Alpha Naphthol

Resin 16.6 2% Para 7.9 6/4
2% Alpha Naphthol
10 gals in Open

Open Unknown 7
Burned 2 } 10 Ds
Dumpler 1

Counted
627 Unknown

Transfd 314
OK 187
Ds 127

59%

Pullouts 93
Ckd Van 34

Req Van made in open
(903'V)

Transfd – 348
OK 285
Ds 63

81%

Pullouts 54
Ckd Van 4
Mechanical 2

1020 – 16.6 Free P in Resin – 2% Para
8% 6/4 – NO penta –
10 gal in Open Mixer

Open – Bubbles 2
Unknown 9
Dent 2 } 15
Dumpler 2

716 plates
Counted
Unknown 497
Bubbles 4
OK 200

Transferred 350
OK 208
Ds 142

59%

Pullouts 82
Ckd Van 60

1032 – 16.6 Resin 7.9 6/4
1/4% Phenylhydrazine –

Transfd 100
OK 17
Ds 83

17%

Ckd Left. 10
Pullouts 7
Crushed 66

1029 Reg Resin 16.6 Reg
Except 4% Penta #41

OOEN – Bubbles 7
Uneven 8
Dirt 6
Rewash 5 – } 23 Dis
Dimples 2

Comal
Bubbles 577

Transfers 288
OK 189
Dis 99

65%

Pulls 47
Ckd Vac 52

1030 Resin 16.6 7.9 6/4 –
½% glacial phos acid –
no penta – dissolve 6/4 in af-
ter add glacial – don't clean up.

OOEN – Bubbles 10
Dirt 3
Dimples 7 } 20 Dis

Comal
Bubbles 695

Transfers 349
OK 350
Dis 299

Pulls 48
Birds 4

14%

Cracked 194
Lefts Cracked 18
" Cracked Edge 35 –

1023 – 28 Edenson
16·6 Room 2% Para 7·9 6/4 2% Penta

41 penta,

52%

Transfer 296 — Pull outs 32
OK 176 — Cracked 88
Dis 120

Comal
Bubbles 63
Uneven 327
OK 208

Oven Bubbles 5 Raised 2 Uneven 10 Dimples 1 } 18 Dis.

1026 31 Edenson – 16·6 Room 2 Para
7·9 6/4 4 penta 3% Water.

41 Penta

Transfer – 308
OK 173
Dis 135

56%

Pull Outs 54
Ckd 81

Comal
Bubbles 22
Uneven 412
OK 208

Oven – Bubbles 4
Uneven 4
Dirt 3
Raised 5
Dimples 7
Chipped 1
} 24 Dis

1027 32 Edenson 16·6 Room 2 penta
7·9 6/4 4 penta (41) 3% ammonia –
Open Mixing

Oven Bubbles 3
Uneven 13
Dirt 10
Raised 7
} 42 dis
Dimples 9

Comal
Bubbles 24
Uneven 579

Transfer 302
OK 217

71%

Pulls 65
Ckd 20

~~1031~~

1031 1616 Resin 7.9 6/4 077
Glacial phos acid - Dissolve 6/4
in Alcohol first then make passage
with small amount of Alc - then add
Ulex to 6/4 No Penta -

Obsn - Bubbles 2.
Unseen 28
Dent 3
Raised 106

539 Comal

Transfd 188
OK 29
Dis 166

11%

Lift Ckd 18
Lift Ckd 2 16
Pull Outs 26
Ckd Var 106

Lowestoft

Record

Phos Combination watch 6/4

Transfd Oct 6th -

Regular Today

903 Var ~~40~~ 40 penta

Transfd 2898 Made 6 eq 6 bl mixer
OK 2374
Dis 524

Lifts Ckd 4
Pull outs 474
Ckd Var 43
Mechanical 3

85% OK

Reg Made Oct 1 = (40) penta.
Open mixer -

Transfd 302
OK 173
Dis 129

10 gal

57% ——

Pulls 116
Ckd 4

Oct 8

1034 – Lot 613 – 16·6 Room 7·9 6/4
1% Chloride Ammonia
No paca or Penta 7 hour – 613B

Flowing room-Temp 88° Var 80. Visco 2.45
Color Lemon, plates have good body
Matte – Plates look good.

OVEN

Bubbles	10	Uneven	647
Uneven	4	Patched	51
Dirt	8		
Raised	13		
Dumples	6		
Transfd	316	Pullouts	38
OK	256	Cracked Var	21
Dis	60		

81%

Print. 12 inspected
4 Discarded – 3 ckd in Music 1 in feedline
8 ok

725

Prints 244	Knocks 14	Crooked 6	
Dis 67	Scratch 1	feedline Crack 22	
OK 177	Holes 7	poor print 6	
	Ckd Cuts 1	Colorite Spots 5	
	Roughsurf 5		

Oct 8th 1914

1035 Lot 614 16·6 Room 7·9 6/4
3/4% Chloride Ammonia – Lot 614B

Flowing Room T 90 Var 84 Visco 2.50
Melted Lemon color good body plates look good.

Plate Bubbles 7

OVEN – 720 Plates 7 Hour Cake Uneven 44
Dirt 18
Dumples 3
Chipped 1
76

Uneven 629
Peeled 39 24 over

Transferred	336	Pull outs	67
OK	247	Cracked	22
Dis.	89		

Prints 66% 73% Print 12 Inspected 6 Discarded – 6 OK
1 Knock
3 Holes
1 feedline ok 1 cracked
50%

Req Oct 9th

Transfd	120	Prints 235	Knox 22 1035
OK	93	Dis 50	Cracked 3
Dis	27	OK 154	Holes 8 66%
			Rantout 1
			Roughs 2
			Crooked 4
		77%	Feedline 23
			Poor print 17

Pullouts 17
Ckd Var 10

1036 - Lot 615 16.6 Resin. 7.9 6/4 -
1/2% Chloride of ammonia -

Flowing. Room Temp 90 Var 86 Visco 2.42
Lemon color, plates look good -

	Dio -	Cowel
Oven -	Bubbles 1	Bubbles 48
	Uneven 13	Uneven 514
	Dust 7	Patched 135
	Raised 1	
	Dimples 5 / 27	

Transferral - 349
OK 284
Dio 65

Cooked Center	9	
Lifted	1	81%
Pull.	41	
Cracked	14	

1036

Print 272 — Knox 12
Dio 370 — Cracked 3
OK 200 - Run Over 6
White Spot 1
S Spot 1
Holes 11
Cracked 8
Feed Line Cracks 28

73.5

1037 16.6 - 7.9 6/4
1% Para 3% Gum Sandarac - dissolved Sandarac in Alcohol first -

Flowing room Room T 98 Var 81 Vis 3.24
Color green, Mottled, Varn streaks
not much patching. Plates look good

1040 - 16:6 Reac 7.9 6/4 - 1/8 Hydrochloric
+90% Alcohol -
Lot 620 New 6/4

OVEN - Bubbles 5
Uneven 15
Dent 9
Dimples 33
} 62 Dis

Transfer 349
OK 188
Dis 161

Pulls 90
Ckd Var 71

54.5%

Comal
Bubbles 498
Uneven 208

1038 16:6 Reac 7.9 6/4 - 1/8 H.C.l.
Reg 95% al - #2 Lot of 6/4 new
Lot 618 1 Para,

OVEN Bubbles 6
Dint 2
Ranid 2
Dimples 7
} 17

716 pressure
Bubbles 359
Uneven 340

Transfer 322
OK 255
dis 67

Pulls 40
Ckd 27

79%

1039 Resin 16:6 Drip of 1038
Except ~~No Bake~~ No para
Lot 619 Wax 6/4 #2 6/4

OVEN - Bubbles 2
Uneven 4
Dirt 5
Dimples 3
} 19 Dis

Bubbles 521
Uneven 200

Transfer 860
OK 242
Dis 118

56 1/2 %

Pulls 75
Ckd 43

1041 - 16:6 Resin freeflowed 7.9 6/4
1 3/4 Chloride Ammonia
95% alcohol
Lot 621 — of NTP 2 6/4

OVEN - Bubbles 2a Cracked 2
Uneven 18
Dirt 5
Raised 4
Dimples 19

Comal
OK 200
Uneven 323
packed 77

Transfer 300
OK 217
Dis 83

72%

Pulls 56
Ckd 27

1037 – 16.6 Resin – 1% Para 7.9 6/4
3% Sandarac in alkohol funct.

Flowing room Temp 98° Vap 81 Vis 3.24
Color green Mellie, Varne shrinks
Not much pinholing Plates look good

Oven
Bubbles 0
Uneven 4
Dust 3 Unsw 635 ok 91.4%
Raised 29
Dimples 19/55

DONT STAND WEAR TEST

Note No Bubbles

99.53%

Transferred 317
OK 314
Dis 3

Pull outs 00
Ckd 1
Mechanical 2

Prints 314 tested. 98.96% of Negatives taken out 74%

Knocks	23	Rough surface	4
Cracked	5	Cracked at Edge	1
Holes	2	Cracked	6
Run Outs	8	Feed line Crack	21
Scratched	1	Poor prints	5
		White Spots	4

Total 80
Passed 234

No 2 6/4 Hereafter will last 2 weeks

1049 Dup of 1037 except 1/2% Para

Transferred 294
OK 281
Dis 13

95%

5 stuck to plate
Cracked Vac 10
Lifted 3

Oven Bubbles 1
Dust 1
Raised 11
Comet
Bubbles 590

#2 6/4

1050 - Dup of 1037

OVEN —
Bubbles 9
Dirt 3
Raised 82
Dumpless 1

Counted
Bubbles 570

98%

Transfd 277
OK 258
Dis 19

Cracked Vase 19

4 Shick 20 free release 907 blanks Freq stainless flawed 10/12/14 Lot 632 B. Oven 7 -

1051 - 4 Sandrac, 7.9 6/4 #2
1 para —

Counted
Oven Bubbles 6 Bubbles 621
Dirt 3
Raised 60
69

Transfer - 294
OK 285
Dis 9

96%

Chd Vas 9 -

THIS WEARS WORSE THAN 2%
of 1052.

1052 2% Sandarach 7.9 #2 6/4
1 para

Oven Bubbles 15 Conical
Dust 4
Raised 5 Bubbles 464
Dumpers 2

Transfd 239
OK 216
Dis 13

Cracked Vam 11
Pullout 1
Mechanical 1

80 Times Only shows Slight Wedge compared to 4% Sand Chunk 1%

94%

wont show much fancy

Oct 13/14
Reg runs
Transferred 100
OK 78
Dis 22

78%

Pullouts 22 —

1043 - Lot 624 16.6 Room 7.7 6/4
1% Chloride Ammonia —
Reg cracked

Oven Bubbles 4
Uneven 8
Dust 4
Dumpers 29

720 pieces
Conical
Bubbles 12
Uneven 471
Polished 192

Transfer 330
OK 251
Dis 79

76%

Pullouts 62
Cracks 17

1044 – Lot 625 – 8% 6/4 –
1% Chloride Ammonia –
Req cracked

714 plates

Oven = Bubbles 1 – Corner
Uneven 15 – Uneven 473
Dirt 7
Raised 1 – Packed 198
Dimples 19

Transferred 100
OK 72
Dis 28 — 72%

Pull Outs 17
Cracked Var 11

1047 Lot 628 Room 16.1 7.9 6/4
1% Chloride Ammonia –

Transfer 300
OK 235 – 7.4%
Dis 65

Pull Outs 37
Cracked 31

1042 · Lot 622 Resen 16.6 · 7.9 6/4

2.55 c/o Chloroacetic Anhydride —
90% Alcohol —

616 plates

Green Bubbles 2
Uneven 3
Dust 3
Raised 2
Dimples 2
} 12

Uneven 3 7/8
plated 226

1061.

10 Gal - 8. 6/4

2 1/8 % Dragons Blood, alcohol filtered
1% Para

695 plates

Green Bubbles 5
Dust 4
Raised 3
Dimples 3
} 15

Coned
Bubbles 680

Transfer 339
OK 203
Dis 136

59%

Pull out 55
Ckd 81
Mechanical —

424
1

50% sleek to plates —

1062 10-gal 8 6/4

3% Elemi 1% Para — fatter alcohol

670 plates

Bubbles + Uneven 443

used out night 200

Oven Bubbles 13
Uneven 12
Dirt 2
Dimples 4
} 31

Transfer 322
OK 236
Dis 86
Pull outs 15
Cracks 66

73%

50% stuck to plates

Very few bubbles on plates
Simple name —
Transfers Very fine + Coarse and
Color dark and Very transfers

Printed 60
OK 55
Dis 5

Ckd 3-feed lines —
Poor P 2

91%

1063 10 gal 8 6/4

1% Para

1.9% Olibanum — fatter Alcohol

684 plates

Bubbles + uneven 405

Transf out night 200

Oven Bubbles 14
Uneven 40
Dirt 3
Raised 2
Cracked 3
Dimples 14
} 76

Transfer 304
OK 191
Dis 113

62%

Pull out 13
Cracked 99
Mechanical 1

7 Hour Oven Lot 6413

1055 16:1 Resin - 1 para 8.8 6/4
3% Sandarac 147 cal

Oven Bubbles 4
Dirt 1
Raised 219
Dimple 1
} 225 Dis -

Comet Bubbles 525

Old Standard

Transfer 250
OK 248

Cracked 2

99.2%

Surface test shows that it is one good as regular Moore Check it Blade Loader Oven regular Dont Cut after 50 revs on records of 2 records tested 6 with Grooves Count revs cuts - 5.

Of 2 Reg records tested 1 had Rich cut - 4%

Machine test 112 OK 33 Dis -
13 Cracked 3 white spots 7 Holes 2 Ck. 8 Feed Lumps Dust covered

Prints - 133
OK 119
Dis 14

Marque OK 1
Feed Lum OK 13
14

1- Wear test 100 OK no wear
2 Records 50 hrs show slight wear

89.4

1054 16:1 Resin 1% Para
8% 6/4 —
3% Sandarac 147 cal added

Oven Bubbles 22
Uneven 28
Dirt 11
Raised 127
Dimple 5
} Dis 193

Comet Bubbles 487

Transferred 234
OK 236
Dis 1

99%

Cracked Vase 1 --

Surface test of prints shows no worse but surface cracks - of 2 records tested 1 had Card RO - Evidently 8% 6/4 not enough when 3% Sandarac used

Record Cuts 8 6/4 is not Enough -

Prints 134
OK 129
Dis 13

Cracked 9
Poor pt 6
Eye Dimples

91% NG

Descanted Clean

1053. 16:1 Resin 1/2 para
7.9 6/14
1% Chloride commenced
147 cc

Comcl
Bubbles 641

Oven Bubbles 5
Uneven 5
Dust 11
Raised 36
} 57 Dis

1056 16:1 Resin 1 para
8.1 6/4 - 3% Dandruff
147 Alcohol

Comcl
451

Oven Bubbles 11
Uneven 17
Dust 3
Raised 28
Dumpers 1
} 60 — 91% 6/5 OK 200 —

Transfers 326
OK 319
Dis 7

97%

Cracked Vac 7

Printed 60
OK 45
Dis 15
Fused Lumps 15
75% Eye Imperfn

250 Turns wear only little

Oct 16 — Regular

Transfd 100
OK 93
Dis 7

93%

Pull outs 6
OKd 1

1057 16:1 Resin - 1% Para
8.2 6/4
3% Sandarac -
147 dbacbac

OVEN Bubbles 12
Uneven 21
Raised 32
Dimples 3
Dirt 6

Coreal
90% Biscuits 453
Uneven 200

Transfer 326 TH
OK 323 99%
Dis 3

Cracked Var 1

250 Fumes, only a few little uneven OK

Printed 60
OK 55 91%
Dis 5

Cracked 5 - feed line - Eye Inspection

1058 16:1 - 1% Para
8.4 6/4 -
3% Sandarac -
147 dbacbac

Transfd - 294 99
OK 293
Dis 1

Mechanical defect 1

Prints 221 Feed Smudges 3 Eye inspection
OK 216 Poor Prints 5
Dis 5

97.5%

1059 - 161 Recm 1 para
8 6/4 —
1% Scandanavia —
147 cl Cracked

Open - Bubbles 18
Uneven 18
Dust 9
Ruined 2
Dumpler 16
16

Cmcd -
Bubbles 276
Uneven 168
OK 200
644
16
628
97.6%

Transfd 321
OK 309
Dis 12
96%

Cracked Van 12

Printed 242
OK 234 -
Rejected 8
Eggs inspection
96%

4 feed stem cracks
4 poor peeling

1060 161 Recm 1/2% Penna
8. 6/4 —
1% Scandanavia —
147 cl Cracked —

Open Bubbles 14
Uneven 22
Dust 17
Ruined 14
Dumpler 7
Transfd 300 74
OK 283
Dis 17 94.2%
Cracked 17 -

Cmcd -
Bubbles 406
Uneven 200
606
74
532

243 tum only show/ moderate cocav

Printed 206
Rejected 6
OK 200
Eggs inspection
97%

Oct 15 Req
Transfd 100
OK 76
Dis 24
76%

pullout 16
Ckd Van 8

1064 Dup of 1055.

739 plates

OOER- Bubbles 23
Uneven 12
Dirt 12
Raised 16
Dimples 6
} 69

Bubbles+Uneven 356
Uneven 113
69
538

Note 1st 1055 was with old Sandarina on Last 30 years
219 raised in oven

Transfer 334
OK 334
100%

Prints - 260
OK 254
No 6
97.7

Feed line Cracks 5
Cracked 1

1065 Dup of 1055 Cut
use 1/2% Para

Transfers 276 - 99%
OK 275

Mechanical

Printed 213 } Eye Inspection only
OK 213 }

100

1066 - Dup of 1055 1%
para each 1/8%
Orange Glaze — 8.8 6/4

670 plates

Oven — Bubbles 14
Uneven 7
Dirt 2
Raised 100
Dumpled 4
} 127

Comm'l
Bubbles 343 + uneven
Transf Dumpled 2.0d

Transfers 241
OK 262
Dis 9

96% -

Cracked 4
Mechanical 5

Printed 188
Repaired 4
OK 184
} Eye Inspection

3 ckd
1 poor print.

97%

Init

1067 Dup of 1052
2% Increment 8.6 6/4
1% Pecan —

Oven — Bubbles 8
Dirt 11
Raised 10
Dumpled 8

Transfers 338
OK 331

97%

Cooked Center 3
Cracked 2
Mechanical 2

Print 60
OK 52
Dis 8

Feathering 8

~~OK — Eye~~

86%

Oct 14/14

#1058 - 645 Lot 16.1 resin
1% Para 8.4 of 6/4
3% Sandaran.

662 plates

		Counted	
OVEN	Bubbles 23	Bubbles	389
	Uneven 16	Uneven	200
	Dust 13		589
	Ramed 14		73
	Dumples 7		662
	73		

89%

Transfers - 294
OK 293
Dis 1

99%

Cracked!

1045 - Lot 626 Resin 16.6 7.8 6/4
1% Chl Ammonium

700 plates

		Counted	
OVEN	Bubbles 3	Uneven	534
	Uneven 19	Picked	125
	Dust 1		659
	Ramed 6		
	Dumples 12		

Transfer 229
OK 177
Dis 52

77%

Pulled 40
Ckd 12

1046 – Resin 15.0 S 7.9 6/4
1% chloride ammonium

Oven
Bubbles 9
Thin Edges 17
Uneven 14
Dirt 5
Raised 6
Dimples 53
104

724 plus
Count
Uneven 492
Pulled 128

Transferred 210
OK 147 70% –
Dis 63

Pull Outs 50
Ckd 15

1048 Resin 17.4 7.9 6/4
1% chloride ammonium

Oven
Thin Edges 5
Bubbles 7
Uneven 7
Dirt 3
Raised 2
Dimples 37
71

733 plus
Count
Uneven 625
Pulled 37

Transferred 331
OK 177 55%
Dis 154

Pull Outs 122
Ckd 32

1068 2% of Clear resin Extracted from Sandarac by Benzol
1% Para. 8.4 16/4

OVEN – Bubbles 10
Uneven 19
Dust 11
Raised 18
Dimples 17

Transferred 304
OK 299
Dusted 5 98%

Cracked 1
Cooked Centre 3
Marked – 1

Prints 60
OK 60 100%
Eye inspection

1069 White residue of Sandarac not soluble Benzol 2%
1% Para 8.4 6/4 –

OVEN – Bubbles 23
Dust 10
Dimples 4
Raised 42

Transfer 100
OK 98 98%
Dus 2
Cracked 2

Prints – 60
OK 49
Dus 11 81%

1070 - 2% Sandarac 1%
Para 8.4 6/4
½% Nigrosine WNS to Color

1071 Var Resin 16:1 1% Para 8.2 6/4
1 Sandarac

10-

1072 Var same as 1071 with 1/8% Nigrosine -

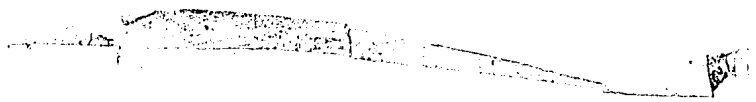
1074 Var 16:1 1% Para 8.4 6/4
1% Sand

1075 - Var same as 1074 with
1/8 % Migration

1076 - Recon 15.7 1% Para 8.6, 6.4
1% Para

1070 Var Recon 16.1 1% Para
8.4 % 6.4 - 2% Sandmac
1/2 % Migration

[ITEMS(S) FOUND IN BOOK]



1060	50	2160	No sign wear
Req	50	"	no sign wear
1060	100	"	Just notice white shade but OK
Req	100	"	note few hills has polish peeled ok.
1066	50	4027	OK
Req	50	"	OK
1066	100	"	OK shade of cut on Coastmal hills
Req	100	"	ditto.

[ITEMS(S) FOUND IN BOOK]

1059	50	24949	OK
Req	50	"	OK
1059	100	"	Polution few killed out
Req	100	"	ditto
1059	250	"	Very little increase of increase over 100
1058	50	38333	Notice shade of white
Req	50		" " "

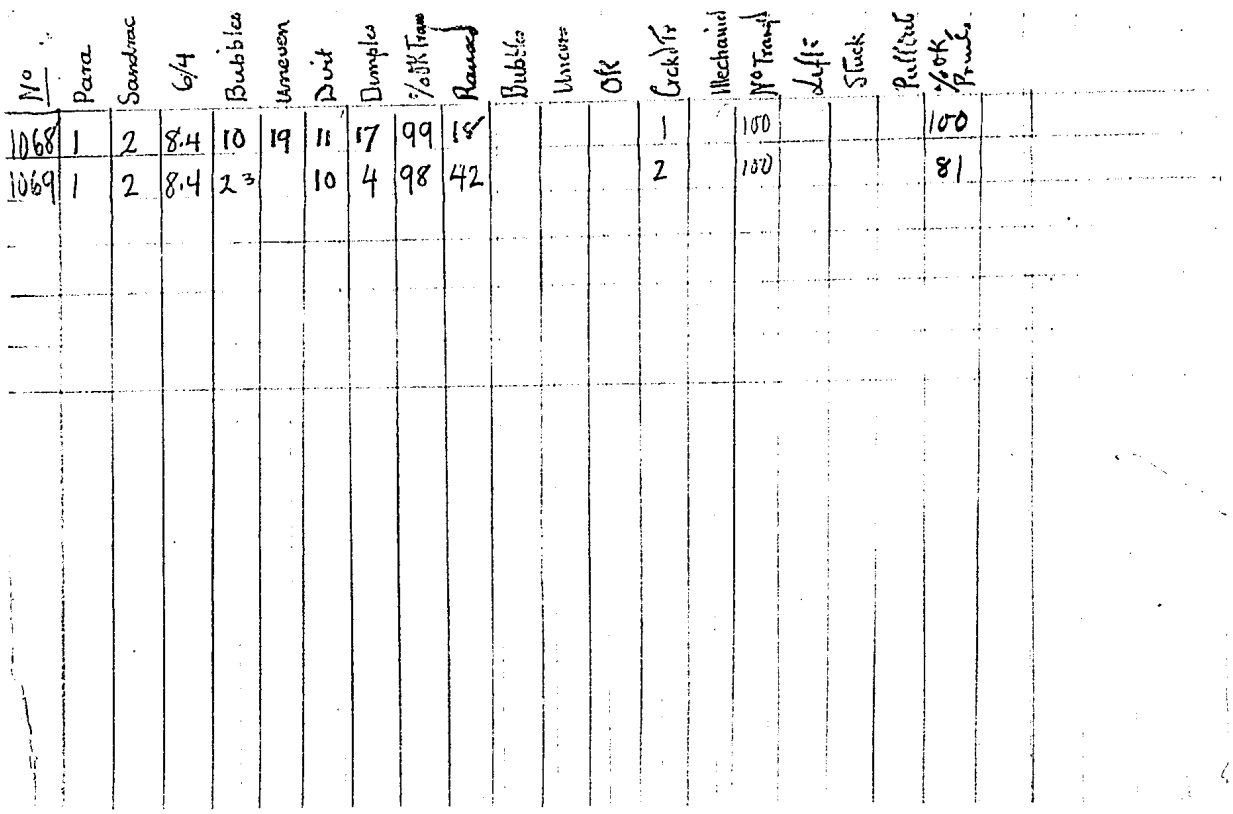
[ITEMS(S) FOUND IN BOOK]

		Speaker	
1065	50	14959	Shows faint tendency scrape polish on a few tiffs
Reg	50	"	About same shade teller
1065	100	"	Polish very little heart but tiffs are cut rather bad as if piece of polish pulled off - not OK
Reg	100	"	None to compare
1065	50	38536	No white OK
Reg	50	"	No white OK
1065	100	"	Shows no white about slight discoloration of polish on tiffs
Reg			Home made

[ITEMS(S) FOUND IN BOOK]

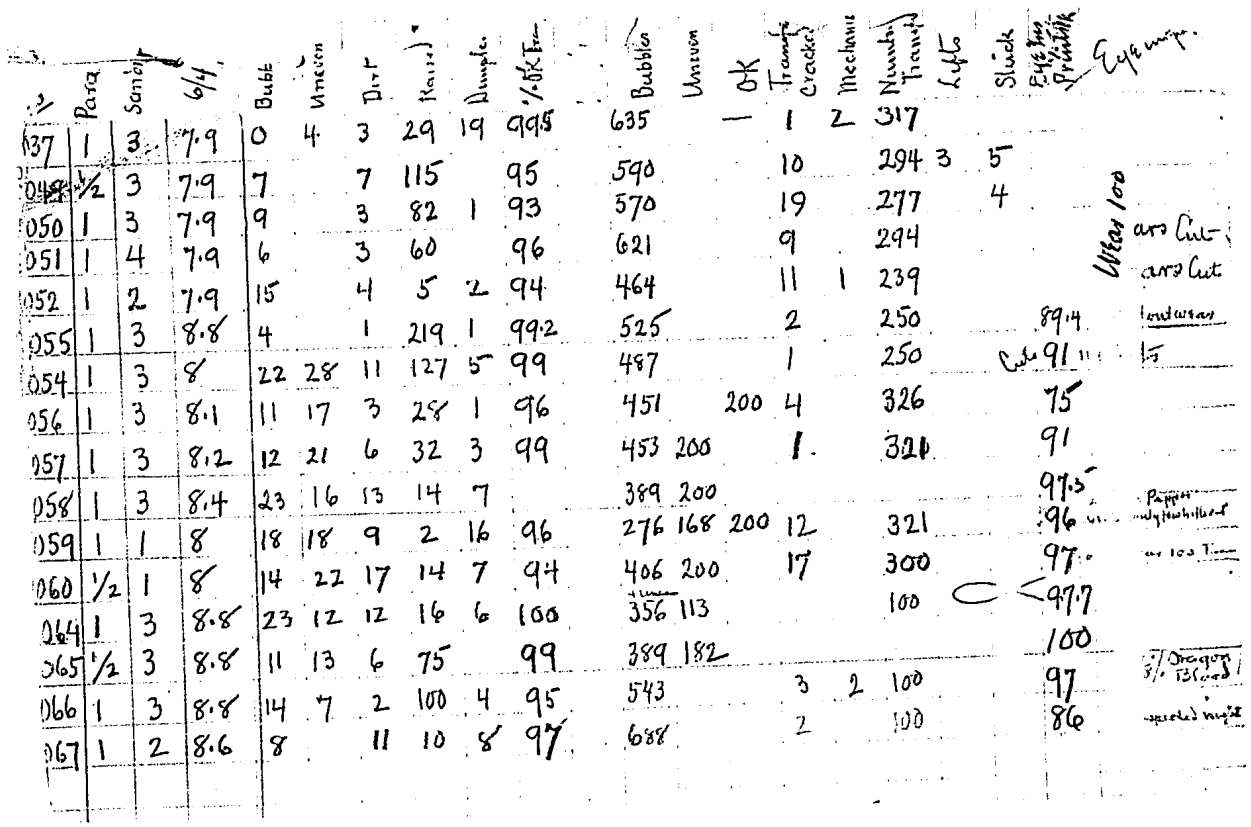
1064	50	38333	Can't see any wear
Req	50	"	About same
1064	100	"	Wear noticable Too Much micro shows only surface polish gone on uphill of big to center — no hills torn
1064	50	33853	White shows too much
Req	50	"	"
1064	100	"	Very white + NG wheels not Cut only polish worn off probably due to lack of polish
1066	50	19399	no signs wear
Req	50	"	no signs wear
1066	100	"	No signs wear
Req	100	"	No signs wear

[ITEMS(S) FOUND IN BOOK]



No	Para	Sandrac	G/4	Bubbles	Uneven	Dirt	Dimples	% OK Trans	Rated	Bubbles	Uneven	OK	Cracks	Mechanical	No Transf	Duplic	Stuck	Pull Outs	% OK Prints	
1068	1	2	8.4	10	19	11	17	99	18				1		100				100	
1069	1	2	8.4	23		10	4	98	42				2		100				81	

[ITEMS(S) FOUND IN BOOK]



#	Para	Sample	6/4	Bubble	Uneven	Dirt	Transp	Dimple	%OK Fm	Bubbles	Uneven	OK	Transp Cracked	Mechanic	Numbr Transp	Lots	Stuck	Eyeline Printing	Eyeline
037	1	3	7.9	0	4	3	29	19	99.5	635		1	1	2	317				
048	½	3	7.9	7		7	115		95	590			10		294	3	5		
050	1	3	7.9	9		3	82	1	93	570			19		277		4		
051	1	4	7.9	6		3	60		96	621			9		294				
052	1	2	7.9	15		4	5	2	94	464			11	1	239				
055	1	3	8.8	4		1	219	1	99.2	525			2		250			89.4	
054	1	3	8	22	28	11	127	5	99	487			1		250			91	
056	1	3	8.1	11	17	3	28	1	96	451		200	4		326			75	
057	1	3	8.2	12	21	6	32	3	99	453	200		1		321			91	
058	1	3	8.4	23	16	13	14	7		389	200							97.5	
059	1	1	8	18	18	9	2	16	96	276	168	200	12		321			96	
060	½	1	8	14	22	17	14	7	94	406	200		17		300			97	
064	1	3	8.8	23	12	12	16	6	100	356	113				100			<97.7	
065	½	3	8.8	11	13	6	75		99	389	182							100	
066	1	3	8.8	14	7	2	100	4	95	543			3	2	100			97	
067	1	2	8.6	8		11	10	8	97	688			2		100			86	

Ulcer 100 are Cut
are Cut
Underway
Cut 91
Paper

Notebook Series -- Notebooks by Edison
Notebook, N-14-12-03

This undated notebook is a continuation of N-14-04-26. It was probably used during the period August-October 1914. All entries are by Edison, except for several notations by another experimenter, possibly Frederick P. Ott. The entries pertain to experiments aimed at the rejuvenation or "regeneration" of used storage batteries. Included are the results of tests performed on cells constructed with different regenerated components, primarily old negative electrode "pockets" reconstructed with treated iron or formed using different crimping dies. There are also a few experiments that involve regenerated positive electrode "tubes" made with treated nickel hydrate. Most of the experiments bear sequential numbers, 241E-382E. Some of the cells produced in these experiments were apparently transferred to the Edison Storage Battery Co. at Silver Lake for continued testing. Their subsequent performance is tabulated in N-14-12-14.1 (see Notebooks by Edison and Other Experimenters -- Storage Battery). Inserted into the book are two memoranda by Walter N. Archer and several loose pages of notes, probably by H. H. Smith. They date from the period August-December 1914 and relate to regenerated iron and nickel experiments being conducted for Edison. The front cover is labeled "Regeneration No Two." The pages are unnumbered. Approximately 160 pages have been used.

Old Fe

241 E (23704)

K Arsenate

1	1700	1390
2	1735	1410
3	1695	1400
4	1735	1440
5	1690	1420
7	1590	1380
9	1675	1475
11	1700	1460
32	1375	1180

242 E (23804)

K Bromate

1	1600	1610
2	1660	1590
3	1620	1540
4	1660	1580
5	1625	1590
7	1535	1510
9	1615	1610
11	1645	1635
32	1295	1285

Old Fe

243 E (2390ft)

K Binoxalate

1	1665	1610
2	1685	1645
3	1555	1545
4	1590	1580
5	1595	1575
7	1475	1465
9	1620	1605
11	1645	1625
~~64~~	~~907~~	~~1020~~
~~65~~	~~937~~	~~1020~~
~~66~~	~~940~~	~~1077~~
32	1390	1200

244 E (2400ft) Very Red

244 K Hypophosphorous.

1	1500	1615
2	1500	1655
3	1425	1575
4	1445	1625
5	1465	1575
7	1390	1505
9	1475	1610
11	1485	1600
~~65~~	~~980~~	~~977~~
~~66~~	~~977~~	~~977~~
32	1290	1440

old72

245E (2410H) · dark.

K Propionate —

1	1645	1650
2	1645	1685
3	1555	1585
4	1590	1625
5	1590	1595
7	1460	1575
9	1540	1660
11	1560	1700
~~13~~	~~943~~	~~1060~~
60	960	1057
~~80~~	1380	1270

246E (2420H) dark —

K Ferricyanide

1	925	1035
2	725	1010
3	385	445
4	520	610
5	435	575
7	510	655
9	740	910
11	750	990

Old Fe

247E (245 off) dark

K Peroxulphate,

1	1560	1335
2	1640	1345
3	1590	1360
4	1690	1475
5	1695	1500
7	1615	1430
9	1725	1515
11	1755	1250
32	1545	1430

248E (246 off) Quite dark

K Ethylsulphonate

1	1635	1675
2	1640	1650
3	1575	1580
4	1590	1625
5	1565	1590
7	1505	1540
9	1600	1615
11	1620	1635
30	1248	1250

Old 72

249E (248 off) Quite dark

K Formate

1	1425	1425
2	1115	990
3	1275	1185
4	1535	1475
5	1585	1595
7	1510	1475
9	1615	1540
11	1600	1545

250E (249 off) Very dark

K Urate

1	1590	1855
2	1845	1820
3	1825	1785
4	1790	1760
6	1665	1640
8	1730	1680
10	1765	1760
31	1580	1470

old 2

251 E (250 off) fairly dark

K Citrate

1	1390	1340
2	1360	1355
3	1445	1435
4	1475	1405
6	1390	1400
8	1535	1475
10	1550	1455
31	1385	1085

252 E (251 off) dark

K Salicylate.

1	1640	1650
2	1620	1590
3	1665	1625
4	1620	1620
6	1535	1510
8	1600	1600
10	1634	1600
31	1380	1350

Obs 7a

253F (252 OH). all red

K Chloro-Chromate

1	540	475
2	525	460
3	590	525
4	535	475
6	640	600
8	600	540
10	675	600
31		

254E (255 OH) dark

K Metaborate

1	1730	1645
2	1690	1615
3	1690	1625
4	1640	1610
6	1540	1530
8	1610	1610
10	1650	1650
31	1500	1260

c-107z

255E (256OH)

K Sulfocyanate.

Very black

1	300	440
2	235	285
3	255	375
4	275	420
6	395	525
8	520	730
10	555	725
~~31~~	~~865~~	~~1290~~

256E (257OH)

all very red

K Ethylenediaminic -

1	1535	1590
2	1490	1560
3	1585	1625
4	1610	1625
6	1540	1550
8	1625	1625
10	1650	1660
31	865	1290

cl07a

257 E (2590ft) part red pantile

Rochelle Salts.

1	1255	1375
2	1400	1425
3	1530	1550
4	1585	1600
6	1475	1490
8	1615	1615
10	1600	1600
31	1395	1395

258 E (2600ft) Hack

K Bromide.

1	1335	1665
2	1260	1615
3	1335	1720
4	1310	1695
6	1275	1575
8	1375	1630
10	1400	1650
31	965	1400

259E (2620H) – black
Dat slightly green smell of ammonia –
K Cyanate.

1	1680	1555
2	1660	1760
3	1665	1755
4	1650	1710
6	1545	1555
8	1620	1615
10	1635	1600
31	1290	1500

260E (2630H)
Semi dark
K Tannate. 10 grms

1	1635	1715
2	1675	1760
3	1720	1835
4	1595	1670
5	1565	1655
6	1625	1725
7	1685	1780
8	1680	1760
10	1635	1720
11	1630	1685

@072

261 E (2650H) Dark.

K Sulphobenzoate, 10 gms.

1	1850	1630
2	1755	1925
3	1760	1950
4	1715	1850
6	1590	1700
8	1675	1755
10	1700	1725
31	12845	1589

262 E (266 Off) Mixed red & black

K ferricoxalate.

1	1855	1750
2	1845	1645
3	1870	1725
4	1825	1685
6	1670	1590
8	1725	1675
10	1720	1700
31	1470	1500

263 E (267 off) Black.

Sodium Bicarbonate.

1	1840	1785
2	1775	1720
3	1815	1775
4	1745	1755
6	1630	1575
8	1700	1685
10	1700	1700
31	1395	1040

264 E (268 off) dark.

Sodium acetate.

1	1840	1550
2	1745	1730
3	1760	1760
4	1715	1785
6	1590	1580
8	1685	1625
10	1700	1635
31	1245	1070

old fa

265E (269 OH) Mixed

Sodium Cyanide.

1	1675	1730
2	1550	1650
3	1765	1815
4	1745	1875
6	1700	1780
8	1730	1745
10	1735	1760
3	1249	1511

266E (270 OH) dark

Sodium Oxalate,

1	1760	1800
2	1660	1690
3	1730	1765
4	1735	1755
6	1610	1590
8	1635	1630
10	1550	1540
31	1200	1345

ODTz

267E (271 eff) mixed

Sodium Ammonium Phosphate,

1	1580	1770
2	1535	1760
3	1590	1875
4	1575	1805
6	1485	1740
8	1515	1730
10	1540	~~1730~~ 1740
31	1119	

268E (272 eff) mixed

Sodium Hypophosphite -

1	1985	1855
2	1940	1860
3	1985	1945
4	1940	1890
6	1785	1760
8	1815	1755
10	1810	1790
31	1610	1610

old 72

269E (2730ft) dark.

Na. Bromide

1	1860	1825
3	1725	1720
4	1650	1640
5	1755	1750
7	1760	1725
28	1345	1340

270E (2740ft) Red + Black -

Na. Arsenicate -

1	1525	1650
3	1415	1550
4	1400	1517
5	1510	1630
7	1490	1600
28	1180	1290

old 7a

271 E (275 cH) Mixed

Na. Phenylate

1	1690	1350
3	1540	1290
4	1505	1280
5	1640	1385
7	1640	1380
	1240	1000

272 E (276 oc) Brown

Na Phenylate.

1	1615	1760
3	1700	1790
4	1655	1750
5	1760	1830
7	1755	1810
28	1360	930

0187z

273 E (277 alt) Rock

Na Sulphite -

1	1860	1860
3	1700	1725
4	1610	1645
5	1685	1695
7	1700	1810
28	1440	1395
32	1500	1475
33	1585	1535
34	1565	1530

CO

274 E (278 alt) dark

Na Benzoate.

1	1790	1715
3	1625	1635
4	1570	1575
5	1645	1675
7	1600	1600
28	1240	1217

0172

275 E (27901t)

Na Carbonate

1	1895	1795
3	1755	1705
4	1655	1600
5	1760	1690
7	1780	1780
28	1460	1290
32	1550	1335	Co
33	1625	1415	Co
34	1600	1480	

276 E (28001t)

Na Sulphide Red spots on some parts,

1	1585	1590
3	1760	1670
4	1740	1675
5	1790	1725
7	1770	1750
28	1660	1485
32	1795	1625
33	1860	1690
34	1875	1690

CD7E

277 E (2810tt) Black

Na Chloride,

1	1935	1720
3	1795	1550
4	1680	1490
5	1765	1565
7	1745	1625
25	1395	1245
32	1515	1265
33	1555	1345
34	1565	1295

Co

278 E (2820tt) all Red

Na Bisulphate,

1	1650	1720
3	1775	1760
4	1735	1705
5	1815	1755
7	1790	1810
25	1250	1310
32	1335	1475
33	1400	1500
34	1365	1500

Co

0172

279 E (2830tt)

Na Borate.

1	1745	1850
3	1635	1720
4	1565	1630
5	1685	1727
7	1675	1725
24	1205	1310

280 E (2840tt)

Na Salicylate.

1	1825	1850
3	1700	1720
4	1640	1650
5	1720	1720
7	1710	1710
25	1310	1315
32	1415	1415
33	1465	1467
34	1435	1465

0172

281 E (2850ft) Mixed

Na Nitrite

1	1780	1790
3	1640	1560
4	1560	1525
5	1645	1437
7	1635	1600
28	1200	1200

282 E (2860ft) Mixed

Na. Phosphite

1	1660	1800
3	1560	1645
4	1525	1590
5	1645	1685
7	1600	1710
28	1295	1565
32	1355	1420
33	1400	1500
34	1365	1465

CO

Oat 72

283 E (287 Oft) All seed

Na Silicofluoride

1	1680	1575
3	1670	1560
4	1615	1510
5	1695	1600
7	1640	1600
2	1365	1215
32	1415	1220
33	1415	1280
34	1415	1285

Oil

284 E (288 Oft) Mixed

Na Biphosphate.

1	1275	1445
3	1435	1550
4	1400	1515
5	1600	1640
7	1535	1645
2	1200	1200

0872

285 E (290 Ott) Mixed

Na Fluoride

1	1605	X
2	1680	X
5	1565	—
6	1635	—
7	1680	—
8	1670	—
10	1625	
11	1600	

286 E (290 Ott) Mixed

Na Tartrate,

1	1600	1550
2	1555	1250
5	1502	1415
6	1590	1530
7	1645	1635
8	1685	1600
10	1625	1565
11	1595	1545

Manganese Bad

0172

287 E (291 ott) Brown

Na Manganate.

1	1100	1155
2	650	755
5	845	860
~~6~~	915	940
7		
8	955	945
10	875	880
11	855	870

288 E (292 ott) black

Na Chromate.

1	1610	1615
2	1685	1670
3	1600	1585
4	1650	1640
6	1660	1655
7	1570	1565
9	1555	1525
10	1525	1500

26	950	1450	Hot 500 — 1415
27	1235	1450	
28	1240	1360	
29	1125	1500	
30	1200	1310	
31	1130	1260	

26	1105	1165	Hot 1425 — 1425
27	1600	1600	
28	1720	1720	
29	1745	1740	
30	1800	1765	
31	1835	1835	

0072

289 E (2930ft) Light yellow

Na Diannate

1	1710	1550	12
2	1665	1485	
3	1565	1460	
6	1655	1590	
7	1735	1615	
8	1750	1690	
10	1740	1675	
11	1685	1635	

290 E (2940ft) Mixed

Na Sulphacarbonate.

1	1200	1150
2	1600	1400
3	1795	1655
6	1820	1725
7	1850	1790
8	1830	1750
10	1780	1645
11	1770	1665

26	2060	1350	Het 1480 — 1250
27	1535	1260	
28	1720	1345	
29	1665	1190	
30	1595	1265	
31			

Old

291 E (295 Ott) Mixed

Na Peroxide 10 grains · Violent reaction

1	1890	1315
2	1820	1400
5	1700	1320
7	1780	1485
8	1870	1500
10	1775	1455
11	1770	1440

292 E (296 Ott) Mixed

Na Butyrate

1	1550	1985
2	1500	1985
5	1415	1775
7	1590	1860
8	1595	1875
10	1570	1810
11	1565	1790

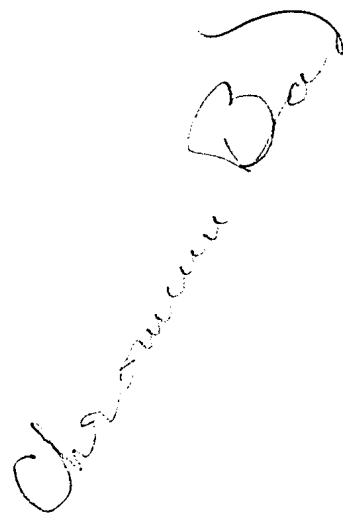
CD72

293E (297Otk) Yellowish-

Na Bichromate.

1	1120	1135
2	865	855
3	755	760
7	920	915
8	955	955
10	875	875

Co



294

1	900	927
2	1113	1130
3	1150	1150
4	1160	1170
5	1217	1220
6	1275	1240
7	1263	1267
9	1277	1283
10	1287	1297
	10 Heat	
21	1433	1440
22	1413	1417
23	1383	1390
		Hot 533 550
64	1300	1383
65	1307	1340
66	1290	1323
117	883	790
		Hot 883-790
118	1360	1367
119	1360	1407

No change better than Replicate

294 - Reg green. hot soaked 48 hours in hot Concentrated Nickel Chloride - both hot when put together no Excess Liquid (12) no free Liquid but slice very moist outside each particle.

Dried -

Then put in 20% (NaOH) 24 hours -

Then washed perfectly free of Cl as tested by Ag Nitrate -

Both sent to Rochester with instructions for Analysis to Heake -

(12) 294 & 295 -

295

1	717	683
2	973	933
3	1000	983
4	1060	1020
5	1107	1060
6	1110	1077
7	1167	1133
9	1200	1197
10	1200	1183
	10Hof	
21	1360	1340
22	1427	1417
23	1413	1400
64	1110	1090
65	1107	1100
66	1090	1080
117	1040	1047
118	1063	1073
119	1063	1077

Hot cup 633–637

Hot cup 1240–1277

Check not used on this

In Cock - 3 pm Monday

295 –

Same as 294. 6 cut Hot Conc Cobalt Chloride used – it was put in when Nickel was hot,

~~Tried~~ Treated exactly as Nickel Chl was –

Both made up in short tubes for test & Endurance –

Tubes used just as came from smith – They may be full of KOH, I heat them on steam plate –

296F old 173E old 4 yr ni—
Run by smith 23 times - manually separated
877–833 - Soaked 48 hours in
Conc Co Cl cold — treated 20% NaOH
to washed free

Acc 243 X

297E old 174E treated
Conc Co Cl cold 48 hours

	1V	1/2	1V	1/2	
61	172.5	182.5	100	112.5	Cold chg + dischg 30 amp 35° F.
62	180	189	91.5	113.	" " "
63	182.5	188.5	120	132	" " "
64	183.5	190.7	10.8	19.5	Highrate 50 amp Cold 85
65	183	189	23.3	52.9	8/10 volt 70.8
66	182.5	193	175.5	183.5	normal.
67	190	193.5	180	186.2	Equivalents 203.5 207.
68	183	193.5	180	192.5	192.9 199.5
69	190	197.5	178.2	190.7	
70	181	191.5	178.5	199.2	
72	185	193.5	181.2	190	
73	179	188.5	175.7	182.5	
74	183.7	188.2	181.2	190	
75	185.5	196.5	176.5	184	
76	180	192.5	184.5	193.	
77	187.5	197	180	187	
78	65.0	140	50	120	Highrate 100 Rheostat
79	58.2	133.2	58.2	130	" "
80	64.2	126.7	55.8	126.7	" "
81	155	164.2	148	157.5	Temp 130°
82	156	162.5	149.7	152.5	"
83	152.2	159.7	145	150	"
84	148	133.7	140	145.2	"
85	146.5	153	139	144	"
86	181	186	176	186.5	Normal
87	175	181 5	171	178	"
88	177	184	176	179	"
89	172	181	170	176	
90	165	173	164	171	
91	160	188	158	168	

298 - old 176 ~~Soaked Cone~~
Co of Card ~~1x6~~ 1 cases

Must be low density in Elec electrolyte or it don't charge fast enough

Select .9V

.9V					
92	168	177	167	177	
107	174	187	174	186.5	
114	180	188	180	194.2	112 Temp.
118	175	188	173.2	186.2	88
	187.5	201-2	135.7	179.2	Equivalent to
159	155	201	180	193.7	

32	174.5	174	Cold runs after 6 Hot —
33	176.2	177	
34	175	178	
35	177.5	177.5	
36	172	170.7	
37	177.5	177.5	

38	180	189	180	189
40	179	187.5	177.5	187
41	183.5	189	180	188.5
42	185	195	183	195.7
43	181	189.5	180.5	188.7
44	174.2	183	175.2	181.5
45	182.5	190.5	181.5	188.5
46	176.5	186.7	175.5	186
47	177	187	176.5	186.5
48	175	177.5	176.5	178.5
49	160	162	160	163.2
50	152	158.7	152.2	159
51	140	147	140	147
52	145	150	143.5	148
53	145.5	149.2	146.5	151
54	172.5	177.5	172.5	176.5
—	177.5	182.5	177.2	183.5
56	172.5	179	174	181
58	170	179.2	173.2	183
59	167.2	176	170	177.2
60	175.5	183	176.7	184.5

See page 6a

gone on Hot 130° Fah

Hot

Hot

Proceed 3 hours overcoaling by manifold

240 F see book 1 Regn

2 A 4 Cells — 6

Cobalt Conc Dyp

112 tubes parallel

Equivalents 120 Fahr 152 — 155.

Run	I V	½	I V	½
1	121.7	125.7	121.2	126.2
2	114.5	125.5	114.7	125.5
3	125.0	135.0	125.5	133.2
4	127.0	142.5	127.0	143.0
5	135	148.7	133.0	149.0
9	142	—	143	—
10	156.5	175.5	154.2	171.5
11	156	173.5	154.5	170
12	156.5	171.2	154.	170.5
13	155	173	152	172
15	165	176.5	165.5	179.5

Hot 120° Fahr

16	148	—	150	—
17	145	—	136	—
18	159.5	—	160.	—
19	162.5		162.5	
20	175.2		175.2	
21	160.5		160	
22	170		169.2	
23	170		170	
24	171.5		171.5	
25	155.7		155	
26	155.5		153	
27	142.5		140	
28	146.		145	
29	145		145	
30	139		141.5	
31	170.5		170.5	

Equivalent 167 — 165

normal run Regt

Equivalent 174.2 174.2

" 187.8 187.8

No on 6 runs 130° Fah

This capacity is at 130 hot.

6 Hot Runs

on board Cooled

gauge

See opposite.

241-X ~~297~~

1	1175	1170	1280	1270
2	1180	1185	1200	1265
3	1440	1475	1480	1465
4	1385	1490	1385	1400
5	1400	1465	1420	1455
6	1450	1540	1450	1460
	1505	1525	1510	1475
	1455	1490	1455	1460
10	1360	1415	1345	1395
11	1385	1445	1335	1400

Marked X

297

241 E X Some Reg 7z mix from Silver Lake put in bottle + 6% sol of Sulphuric acid put in, Sol 1/3 more than Reg mix, it got hot from action was in several hours, added no more heat then poured out put in water decanted Twice then thrown on filter, let 3 times Loader go then then Alcohol Twice, finally alcohol + went home in Morning found the Cone hot, took it out + found top part hard but bottom soft + not dry - put all Except top part in big pie plate When it commenced to steam Stirred + let it steam till stopped it jumped a little used pestle after cap put in bottle It was fairly Black

Will put up on 5 grams packets Reg way

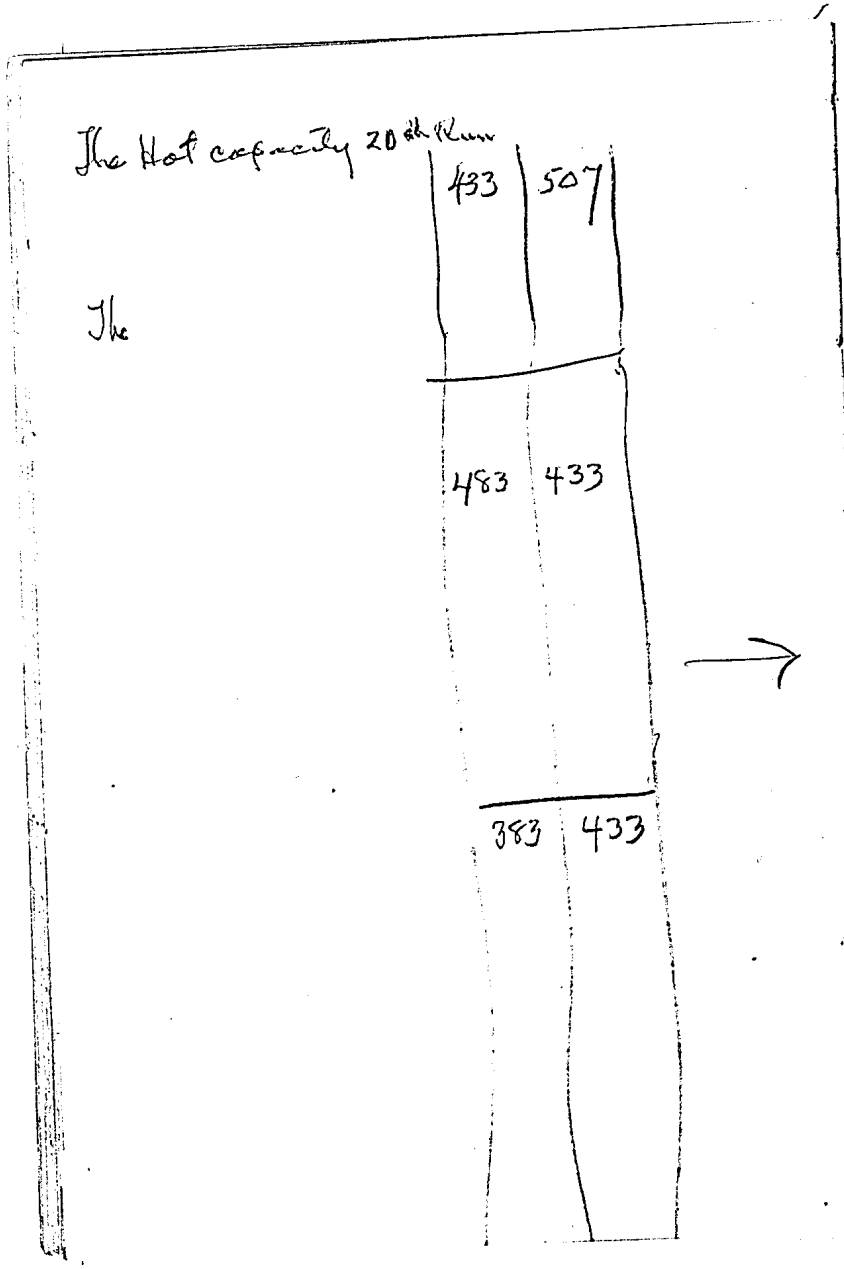
	Run 1		2	
1	320	315	550	540
Dec 4 Run 2	600	650	1085	1080
3	845	810	1160	1185
5			1235	1350
6	1300	1434		
6	1200	1300		
7	1285	1504	1235	1285
10	1055	1135	1200	1255
11	1120	1115	1200	1300

298

242E X

Shes to hard top part of 241 — on pretty in pic place & grandcanyon it doubt get hot showing it self heated during the night,

Shes has a dark [redacted] reddish color in face notice & lovely but pretty dark —



299 X
243 E old 173 E from South sorted
48 hours Cake Cobalt Chloride-
then 20% Nickel washed —

1	327	420
2	500	610
3	550	683
4	607	740
5	636	810
6	647	833
7	683	867

3rd

8	667	857
9	707	900
10	693	690
21	857	983
22	910	1017
23	957	1033

Hot 10

X 244 E Same but old 174 E in
Cobalt

1	417	357
2	580	540
3	640	603
4	700	667
5	730	698
6	743	723
7	773	773

8	760	857
9	807	777
10	793	760
21	953	907
22	1007	977
23	1023	1007

10 Hot.

X 245 E old 176 E
301 Soaked Cobalt Chl —

1	333	433
2	463	617
3	510	683
4	557	750
5	580	783
6	610	797
7	640	823

8	617	820
9	667	800
10	660	850
21	767	1000
22	853	1043
23	907	1067

10 Hot

246 —

1	1785	1785
2	1785	1800
3	1860	1875
5	1760	1800
6	1800	1870
7	1800	1875
8	1845	1795

246

10	1750	1885
11	1775	1880
12	1760	1885 — 10 hot
26	1850	1950
27	1535	1840
30	1810	1810
31	1770	1770

247

1	1790	1790
2	1800	1795
3	1875	1850
5	1800	1750
6	1875	1815
7	1885	1840
8	1820	1765

10	1900	1845
11	1885	1880
13	1880	1895 — 10 hot
26	1485	1820
27	1835	1765
30	1465	1350
31	1755	1595

248

1	1580	1600
2	1685	1735
3	1840	1850
5	1725	1750
6	1780	1820
7	1775	1840
8	1700	1735

10	1735	1795
11	1725	1790
13	1755	1895 — 10 hot
26	1595	1850
27	1770	1780
30	1320	1455
31	1595	1700

302
246 EX

232 E ground Three 150 meals
10% Ex reg fe 7 gm Cookies

303
247 EX Same as 246 beat ground
three 150 meals 7 gm

304
248 EX Same as 246 ground
three 150 meals 7 gm

55

249

1	1370	1600
2	1385	1285
3	1350	1300
5	1455	1360
6	1500	1430
7	1525	1500
8	1550	1465
10	1540	1445
11	1545	1485
13	1565	1510
26	1085	940
27	1325	1290
30	1370	1335
31	1390	1380

Note low

total

305

249 EX

This is Hercules aluminum Sulphate Big Kat crust up by Miller —
Skin sample wrist work
Jig: Hard Salmonid work
Lithia hydroxide —
2000 lbs pressure in Dure mould in Rag 12" Ream Dure press
It was not loaded on plate It got just barely covered —
Used 2 lbs to Each Dure
As loaded covered nicely 2/3 was hard Enough to crush Easy Chalk, to work
It Looks four Coat Commercial fence, in —
Miller is to Load 2 buckets Each Kind, & Clean acid balance to Works, to test if it frades OK —

250

1	1265	1275
2	1115	1290
3	1230	1340
5	1365	1390
6	1425	1430
7	1510	1510
8	1465	1495
10	1455	1455
11	1500	1500
13	1535	1535
26	960	960
27	1450	1450
30	1400	1400
31	1400	1415

10 th of

306
250 E X Corp of 249 East
coast with 5% of 21 NOV,
Hardnews is slightly on
favor of KEE.

251

1	1175	1270
2	1165	1275
3	1160	1300
5	1260	1400
6	1300	1430
7	1295	1510
8	1405	1515
10	1360	1425
11	1395	1550
13	1450	1595
		10 Ctl
26	870	1435
27	1300	1590
30	1335	1400
31	1385	1425

252

1	1170	1170
2	1260	1250
3	1300	1265
5	1395	1355
6	1445	1350
7	1505	1505
8	1500	1465
10	1495	1455
11	1545	1490
13	1555	1500
		10 Ctl
26	1345	1280
	1465	1440
30	1400	1365
31	1395	1385

307
251 — Lethimsalonate 2½% Solution used to dress tlaw 5%

308
252 2½% 21% Rod used —

309 to 332

given to Fred Ott

for his Ferrotype Scrapbook

From personal Effects

1945

309-E

1	1960	1973	
2	2054	2066	
3	2153	2167	
4	2200	2193	
6	2133	2087	
7	2060	1987	
11	2100	2107	
12	2060	1987	
13	2033	2013	
14	2000	2000	
15	2053	2053	Hat 10

28	1327	1287
29	1567	1540
30	1667	1720
31	1400	1793
32	1720	1713
33	1833	1827

310 E

1	1133	1667	
2	1486	1814	
3	1453	2120	
4	1567	2267	
6	2093	2233	
7	1980	2180	
11	2100	2313	
12	1987	2240	
13	2007	2227	
14	1953	2193	
15	2060	2287	Hat 10

28	840	1567
29	1167	1690
30	1653	1800
31	1813	1907
32	1720	1833
33	1520	1807

1947 [illegible]

311 E

1	1700	1833
2	1840	1974
3	2120	2213
4	2267	2333
6	2233	2227
7	2187	2206
11	2367	2313
12	2213	2220
13	2227	2220
14	2247	2193
15	2303	2260

28	1447	1580
29	1913	1953
30	1973	[illegible]
31	1953	1953
32	1907	1953
33	1950	1967

312

315 & 316 E 2 Ferrous Aluminum Sulphate #1945 of VIII

Snow proceed 2000 L(60), 12" Rain, 4" dia - Screen then 10 mesh & one 100 mesh - Loaded in Loading Machine - put in frame by Smith then proceed req - 149 Corrugating —

1	2054	2174	
2	2013	2200	
3	2000	2200	
5	1960	2100	
6	1847	2300	
8	1807	2160	10 Hot
			Hot 1433-1427
21	1573	1771	
22	1653	1767	
23	1713	1853	
24	1673	2193	
28	1853	1853	
29	1807	1967	
31	1867	2127	
32	1833	1987	
36	1720	1953	

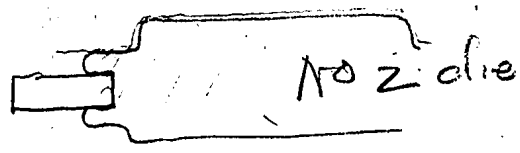
31	2320	2127	
32	2193	1993	
36	2133	1973	Co

317
318 E Same as 315, 316 } Except Stamped with Co. No 2, Company Dia.

1	2220	2134
2	2320	2200
3	2333	2227
5	2227	2133
6	2187	1993
8	2153	1953
21	1600	1600
22	1807	1773
23	2053	1907
24	2070	1853
28	2240	1980
29	2207	2053

10 Hat Hat cap 1427-1427

P



31	2320	2253	
32	2227	2100	
36	2187	1967	Co

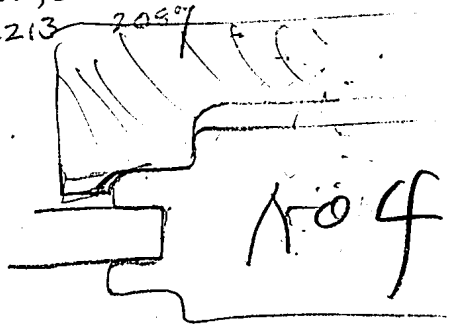
319 } E
320 } Same as 315 316 Except
Crimped with CCO No 3
Crimping dies -

1	2286	2214
2	2353	2133
3	2375	2227
5	2273	2167
6	2200	2060
8	2233	2060
21	1767	1767
22	1913	1913
23	2093	1927
24	2013	1960
28	2240	2120
29	2213	2097

1593-1413

Flat Flat Crimp dies

just pressure little more



Run			
21	1920	1600	- Hot core 1473–1420
22	1907	1920	
23	1927	1547	
24	1953	1547	
28	2180	2020	
29	2200	1993	
31	2268	2120	
32	2180	1993	
36	2100	1547	Co

Ferrocer TiHy SO3 Iron 1945 gmm

321E
322E Mould with 5% of a 5% add of KOH, poured 2000 Lbs in die. 4th die, 200 grams Cake - ground & screened through 10 on 100 Loaded in loading mac put in drums by quality upon packed & Corrugated Prop

1	2260	2346
2	2253	2340
3	2227	2267
5	2132	2093
6	1980	1980
8	1920	1907
~~28~~	~~2180~~	~~2020~~

HBC

21	713	1583	II of war 1443 – 1480
22	9[illegible]	1767	
23	2140	1947	
24	2153	2080	
28	2333	2240	
29	2353	2300	
31	2453	2333	
32	2360	2167	Co
36	2317	2033	

323–324E } Same as 321-22 – except Cramped offs 170 2 die –

1	2166	2066
2	2313	2140
3	2373	2160
5	2307	2153
6	2253	2060
8	2320	2067
~~26~~	~~2373~~	~~2240~~

Hot OK

21	1947	1920	Hat com 1540 – 1527
22	1920	2200	
23	2147	2360	
24	2153	2213	
25	2260	2353	
29	2353	2367	
31	2347	2427	
32	2227	2347	
36	2247	2327	Co

325 E
326 E Same as 321-2 except
Crimped on OTG AO (3) die-
probably 2

1	2134	2134
2	2233	2260
3	2227	2227
5	2133	2133
6	2267	2267
8	2127	2087

21	1467	1360	Hardness 1653-1482
22	2320	1953	
23	1947	1913	
24	1957	1900	
28	2187	2100	
29	2200	2087	
31	2267	2260	
32	2207	2087	
36	2207	2053	Co

327 E
328

Ferrous Mtl 450 # 1945 Yum

Moulded with 5% of 21% NOT pressed 2000 lbs 1½" Ram 1/4" die ground Worn 10 needs on 100 Loaded in Machine put in frame by Quality man Used Req d.i.c.o, Co Cor

1	2040	2026
2	2100	2113
3	2130	2227
5	2133	2133
6	2180	2180
8	2060	2033

21	1627	1513
22	2093	1950
23	1567	1927
24	1544	1952
28	2053	2060
29	2067	2067
31	2260	2127
32	2093	1967
36	2033	2047

Nation 1457-1547

329 E
330 E
Dup 327-8 except
Cramped Offs NO Z die

1	1934	1906
2	2013	2027
3	2100	2127
5	2033	2113
6	2000	2120
8	1867	1980

21	1533	1533	Hatwon 1593–1700
22	2000	2000	
23	2053	2000	
24	2067	2087	
25	2020	2000	
26	2093	2013	
28	2193	2167	
29	2233	2193	
31	2253	2233	
32	2193	2167	
36	2067	2000	

331 = 332 Dup 324–8 – Except Crimped offs x 3 die – probably die

1	1826	1814
2	2007	1960
3	2133	2113
5	2133	2120
6	2143	2013
8	2000	1907

252 BX

1	1967	1987
2	2060	2080
3	2100	2153
6	1973	1960
7	1853	1893
9	1567	1833
26	1713	1713
1		

— 2 hairs overlapping

8 gram Ferrous Ammonium Sulphate Attack —
Loaded by Archer
100 Wicks —

249 BX

1	1767	2120
2	1740	2046
3	1813	2060
4	1820	2000
6	1787	1953
7	1746	1853
9	1807	1800

Marked BX

250 BX

1	2060	2093	26	1713	1820	
2	2094	2080	27	2150	1847	2 hairs overlap
3	2087	2153				
4	2130	2133				
6	1993	2007				
7	1893	1900				
9	1867	1913				

251 BX

1	2053	2000	26	1987	1720	
2	2080	2054	27	2500	2200	2 hairs overlap
3	2153	2120				
4	2160	2107				
6	2080	1967				
7	2000	1858				
9	1980	1913				

333

19	2633	2400
20	1337	1700
21	1870	1750
22	1875	1725
23	2413	2667
24	2587	2567
25	2667	2687
26	2613	2533
27	2567	2500
28	1837	1775
29	1684	1850
31	2840	2747
32	2867	2667

750 rate

Normal	33	2927	2907
	34	2773	2787
	35	2653	2667
750 rate	36	1875	1900
"	37	1662	1850
"	38	1662	1962
Normal	39	2813	2820
"	40	2750	2727
"	41	2440	2748
"	42	2673	2680
"	43	2640	2653
"	44	2700	2733
taccut away	45	2740	2747
	46	2225	2258
Heyl rate	48	2325	2225
Normal	49	3047	3067
	50	2667	2770
Normal rate	51	2667	2747

750 rate

334

19	2647/2380	
20	1850	1850
21	1937	1925
22	1687	1977
23	2833	2773
24	2767	2587
25		2520
26	2707	2440
27	2567	2467
28	1975	2000
29	2087	1977
31	2940	2760
32	2907	2780

750 rate

Normal	33	2973	2800
	34	2740	2653
	35	2667	2573
750 rate	36	1912	1987
1600 rate	37	1850	1987
"	38	1975	2056
Normal	39	2773	2773
"	40	2833	2613
"	41	2820	2507
"	42	2793	2533
	43	2767	2533
	44	2780	2600
Heyl rate	45	2813	2690
	46	2150	2162
	48	2187	2262
Normal	49	3038	2929
	50	2760	2620
	51	2793	2520

750 rate

333 F

Press 2 runs with Cut's #4 Crimping die, then die crimps Edges only

1	2633	2633
2	2320	2200
3	1900	2033
4	1325	950
5	1450	587
6	1500	1187
7	2483	1973
8	2400	2167

Waste

750 ma. rate
750 "
750 "
Normal

750 rate

9	2540	2340
10	2387	2080
11	2467	2233
12 *	1387	1675
13 *	1712	1937
14 *	1187	800
15	2420	2387
16	2387	2227
17	2867	2680
18	2627	2640

334 F

Press 2 runs with Cut's die first — then crimp with Cut's #4 Crimping die

1	2620	2400
2	2236	2133
3	2147	2207
4	1300	1412
5	1275	1600
6	1387	1662
7	2313	2433
8	2193	2440
9	2500	2500

750 ma rate
750 "
750
Normal rate

Normal rate

750 rate

9		
10	2553	2387
11	2360	2360
12	1712 *	1750
13	1925 *	1937
14	1711 *	1975
15	2420	2407
16	2587	2527
17	2873	2807
18	2547	2580

333 — 158 Rm 1933 – 2013
334 158 " 2373 2227

750 rate Continued from other on

335

19	2660	2627		33	3080	2933
20	2087	1975	Normal	34	2967	2900
21	2000	2000	Normal 350 rate	35	1713	1547
22	2137	1975	"	36	1720	1520
23	2940	2813	400 rate	37	1967	1847
24	2580	2733	"	38	804	1400
25	2827	2780	"	39	2233	2000
26	2787	2667	"	40	2470	173
27	2927	2640	"	41	847	353
28	2225	1987	"	42	513	453
29	2162	2000	"	43	1800	1860
31	2947	2600	Half rate	44	1400	953
32	2913	2760	"	45	1867	1913
			"	46	180	180
			"	48	773	760
			Normal	49	247	227
			"	50	2340	933
			750 rate	51	133	167
			"	52	3220	2367

336

19	2620	2620		33	2987	3047
20	2062	2062	Normal	34	2993	2880
21	2075	2075	Normal 350 rate	35	1660	1573
22	2062	1937	"	36	1687	1420
23	2813	2833	400 rate	37	1900	2000
24	2740	2773	"	38	1507	1787
25	2800	2813	"	39	2000	1335
26	2667	2667	"	40	193	387
27	2660	2653	"	41	333	1133
28	2162	1975	Half rate	42	440	333
29	2162	1987	"	43	1993	1680
31	2933	2947	"	44	1067	1533
32	2867	2920	"	45	453	200
			"	46	2000	1240
			Normal 350	48	233	340
			"	49	200	267
			51-133 133 Normal	50	1980	1947
			52 3213 3213			

Upto 34th Run thus is best

335 —

335 E

Press 2 rows with #4 Coff Cramping die first, then press with flat die —

750 rate

1	2667	2533		9	2453	2387
2	2240	2133		10	2387	2327
3	2207	2100		11	2357	2260
4	1300	1250	750 Ma rate	12	1797	1725
5	1362	1287	750 "	13	1750	1750
6	1387	1262	750 Normal rate	14	1715	1637
7	2220	2187	Normal	15	2753	2587
8	2200	2180		16	2620	2513
				17	2947	2620
				18	2827	2720

336 — 8 gun plate pressed in Coff No 4 die. Then Corrugated at 4 hrs and Deep Corrugated die

750 rate

1	2620	2667		13	1797	1750
2	2133	2240		14	1887	1650
3	2087	2153		15	2600	2600
4	1175	1250	750 Ma rate	16	2527	2527
5	1300	1350	750 "	17	2886	2853
6	1250	1387	750 Normal rate	18	2747	2747
7	2193	2220	Normal rate			
8	2173	2180				
9	2393	2453				
10	2333	2347				
11	2347	2340				
12	1737	1495	750 Half rate			

	#1	#2	Hot	
34	1900	1905	1445 1225	normal after 10 hot
35	2090	2050		
36	1725	1685		
37	2100	2080		
38	1950	1960		
40	2230	2195		
41	2260	2250	CO	
42	2055	2065		

337 E is 1 lb old 4 yr ♂
treated once 24 hours
with 600 cc of 3% sol
of Sulphuric acid —
~~Heart to~~ washed 4 or 5
times quickly in water —
dried in air 24 hours
Heart to grill — pretty yellow

338 E 2 packets of 337 crushed
+ screened thru 150 mesh 5 grams
mixed with 2 grams red seal
7 - heating 7 gram packets

1	1375	1390	12	2115	2115
2	1925	1965	13	2050	2110
3	2090	2105	14	2155	2145
4	2150	2140	15	2300	2275
5	2100	2100	16	2184	2190
6	2055	2055	17	2130	2130
7	2135	2135	18	2235	2190
8	2120	2129	19	2000	2000
9	2075	2075	20	2096	2085
10	2090	2060	21	1810	1805
11	2065	2065	22	2100	2100
			23	2155	2190 Heat

22	1800	1890	
23	1825	1895	
34	1590	1735	1375
35	1885	1430	1355
36	1500	1560	
37	1740	1870	
38	1725	1780	
40	1975	2065	
41	1890	1985	
42	1755	1540	

Kat

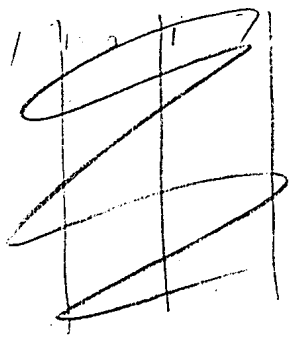
10 Kat normal

Co

339E to 337 Area 150 weeks 2 cycles — 7 grains used to green weave used —

1	580	640	12	1805	1835
2	885	900	13	1765	1850
3	1400	1425	14	1810	1865
4	1795	1800	15	1990	2040
5	1800	1860	16	1860	1925
6	1820	1910	17	1825	1875
7	1850	1970	18	1895	1960
8	1830	1860	19	1755	1820
9	1790	1835	20	1785	1815
10	1750	1800	21	1800	1850
11	1750	1800			

340E to 166 cord weave Same Cat as 337. Cat not treated —



Dec 341

13	1895	1940
14	1985	1995
15	2090	2145
16	1965	2000
17	1915	1965
18	2000	2010
19	1590	1960
20	2100	2200
21	2090	2110
22	2090	2092
23	2040	2150
34	1515	1500
35	1670	1740
36	1225	1330
37	1580	1625
38	1560	1620
40	1725	1795
41	1730	1785
42	1675	1695

Hat
10 Hat
1275
1300

13	1590	1660	34	1655	1510	1250
14	1635	1800	35	1740	1720	1375
15	1945	1950	36	1235	1215	
16	1720	1750	37	1600	1600	
17	1675	1730	38	1550	1545	
18	1710	1715	40	1695	1695	
19	1630	1680	41	1625	1625	
20	1670	1675	42	1510	1510	
21	1600	1710				
22	1590	1700				
23	1710	1745				

Hat

341 – 2 packets – 340 spaced then 150 need 5 spaces mixed need 2 spaces need row –

1	1810	1885	7	1980	1985
2	1960	1990	8	2000	2000
3	1940	1985	9	1920	1945
4	1990	2000	10	1870	1950
5	1895	1930	11	1970	1910
6	1920	1920	12	1890	1905
8					

342 – Same as 341 Get 7 spaces of 340 then 150 – no need mixed need

1	1490	1560
2	1600	1670
3	1625	1675
4	1670	1720
5	1600	1670
6	1650	1715
7	1770	1770
8	1770	1770
9	1685	1685
10	1600	1665
11	1600	1665
12	1690	1695

There are 2 A4 with tin in — Tin is good - but 335 + 336 Reg iron is 3200. What there is very little advantage in iron it. Iho it gives 3900 7 gm

13	3145	3035	42	855	255	195-165 at 350°fah
14	2945	2765	43	285	250	normal
15	2960	2930	44	300	285	
16	3050	2980	46	265	250	
17	2675	2620	47	245	270	5 gm
18	2700	2615	48	265	275	
19	2750	2535	49	245	275	49 gm for 6 only
20	2495	2535	50	275	262	
21	2825	2595	51	280	250	
			52	270	190	
32	2090	2165		104		Hot Cap 1435 - 1460
33	2540	2455		normal		
34	2120	1860				
35	2375	1975				
37	2375	1940				
38	170	145		350 Fah		
39	155	130				
40	180	150				

ng on Low Temp

13	3350	3410	35	3665	3580	
14	3270	3100	37	3670	3530	
15	3225	3345	38	335	330	350° Fahr
16	3320	3375	39	315	295	
17	3250	3435	40	290	250	
18	3050	3085	42	3740	3570	—210-210 at 350°
19	3000	3200	43	3830	3635	normal
20	3115	3170	44	3725	3525	"
21	3390	3430	46	3710	3575	"
			47	3750	3625	
32	3615	3535		Hot		Hot Cap 1570 - 1550
33	3545	3520		normal		
34	3225	3300	48	3695	3570	
			49	3775	3675	
			50	3675	3550	

343E

Ferrous Methy Sulfate Iron is not as good as Regular Iron

This is Ferrous Ammonium Sulphate 6% Hg reat up as Tin Comp - only 20 Tin content

20% of 6 Stannous oxide is mixed with it — Reg 5 grain pockets 750 rate

1	3060	3200	7	3070	3130	
2	2600	3225	8	2537	2625	
3	3000	2925	9	2551	2750	
4	2950	3070	10	2412	2412	300 rate
5	3190	2850	11	2600	2075	
6	3070	3130	12	3125	3000	
7	3250	3270				

344E Reap of 343E cut 7 grain pockets 750 rate

1	3665	3845	8	2775	2910	
2	3400	3500	9	2775	2787	
3	3340	3390	10	2775	2900	
4	3300	3425	11	2700	2700	300 rate
5	3200	3135	12	3345	3415	
6	3215	3310				
7	3215	3310				
8	3285	3355				

169

12	625	25
13	25	20
14	165	40
15	10	60
16	70	50
5 Hot	10	5

C6

345 F

Tin reduced by H from oxide

Mixed with 3% H_2O

Record of 5 gram Cakes

1	65	50	10	820	500
2	250	280	11	255	535
3	730	690	12	60	320
4	1050	945	13	15	55
5	1165	585	14	155	75
6	630	465	15	20	160
7	275	475			
8	645	×			
9	140	295	16	70	10

346 F

Tin reduced by H from oxide mixed 3% H_2O

7 gram Cakes

1	75	160	7	970	1185
2	260	320	8	765	
3	213	915	9	995	135
4	585	1125	10	705	35
5	790	1000	11	550	65
6	1400	1 hour			

	Pressure device	Regular
REG	2000	2200
11	1900	2187
12	1987	2353
13	2087	2253
14	2073	2387
15	2033	2360
16	1960	2213
17	1940	2253
18	1853	2187
19	1733	2320

347E

Pressure device packet

Smith put 2 reg packets in runs twice with no pressure then twice with the pressure & so on alternating packets

Each 2 runs

	Pressure	Regular check
1	2760	2753
2	2260	2240
3	1993	X2153
4	2113	2267
5	2087	2327
6	2000	2260
7	1973	2207
8	2000	2180
9	1953	2167
10	2000	2260

pressure increased

screwed up again

Screwed up again before pressure

Screwing [illegible]

[illegible] Experiment No [illegible]

348E

750 rate

	Cap Hat	19	20	21	22	23	24	25	26
Reg	1300	1333	1267	1426	850	950	775	1627	1255
"	1185	1160	1153	1175	737	687	650	1213	870
"	1190	1587	1467	1554	1087	1062	937	1800	1270
"	1150	867	880	694	562	612	462	840	560
Oil 2	1433	1187	1640	1547	925	1050	1225	1867	1907
"	1480	1147	1320	1333	537	975	987	1907	1933
Oil 4	1473	1341	1347	1443	812	962	962	1867	1940
"	1527	1833	1933	1867	1220	1325	1387	2513	2487

#9 to 18 were hot runs.

750

	27	28	29	30	31	32	33	34
Reg	1340	1467	1580	1087	1087	1112	1667	1840
"	1213	1180	1167	737	800	687	947	1160
"	1233	1367	1427	1012	900	862	1260	1540
"	760	767	1120	487	450	437	760	567
Oil 2	2100	1867	1833	1200	1075	1150	1833	1967
"	2113	2040	1967	1262	1162	1257	2073	2127
Oil 4	2340	2107	1973	1262	1162	1250	2073	2133
"	2527	2633	2433	1587	1507	1700	2940	2693

Reg	2613	2600	2600	1800	1862	1862	2633	2640
"	2667	2727	2667	1912	1925	1900	2620	2633
"	2653	2653	2600	1912	1862	1862	2573	2620
"	2067	2133	2200	1425	1375	1370	2120	2180
Oil 2	2767	2640	2647	1962	1925	2012	2573	2540
"	2727	2567	2587	1962	1937	2012	2573	2520
Oil 4	2767	2607	2633	1950	1937	1997	2627	2583
"	2720	2567	2600	1937	1975	2025	2627	2520

750

	35	36	37	38	39	40	41	42
Reg	1973	2047	2040	1275	1087	787	1900	1953
"	1080	1173	1007	650	562	512	940	1040
"	1420	1547	1293	750	662	25	1187	1087
"	647	767	453	250	312	162	400	373
Oil 2	1820	1953	1973	1375	1287	1200	1707	1800
" 2	1973	2107	2100	1500	1550	1450	2187	2227
Oil 4	1973	2120	2133	1500	1580	1412	2180	2233
Oil 4	2480	2620	2627	1800	1675	1750	2687	2573

Original Solution in — H2 well put solution in

Reg coils + acc of improved —

750

	47	52	53	54	55	56	57	58
Reg	1960	1953	1933	1175	1187	1250	1907	1967
"	707	647	747	362	425	450	780	733
"	973	907	953	187	500	650	867	720
"	353	347	360	137	175	187	333	300
Oil 2	1720	1673	1680	1100	1062	1000	1567	1667
"	2267	2160	2107	1400	1387	1337	2107	2133
Oil 4	2227	2100	1970	1312	1312	1162	1980	1973
"	2707	2467	2400	1687	1562	1562	2593	2527

Runs above made with and or before

Remeasuring Reduction —

Test of Regulon with Reg + Off's die #02 + #04 348 Smith

	1	2	3	4	5	6	7	8
				750				
Reg	1999	2333	1867	1753	1037	1087	1000	1713	1687
"	2000	2487	2000	1933	1100	1187	1000	1680	1707
	2001	2393	1967	1573	1037	1000	1037	1547	1813
	2002	2360	1750	1687	900	937	950	1680	1620
Off #02	437	2587	2193	2277	1412	1400	1437	2253	2087
"	438	2580	2247	2320	1500	1500	1600	2387	2320
Off #04	439	2593	2393	2427	1600	1650	1637	2487	2480
	440	2620	2400	2493	1725	1775	1837	2747	2660

		750
average	1707	972
Off #02	2223	1519 -
Off #04	2570	1737 -

Reg is only 66% of #04 + 750 rate only 55%.

Looks very much as if we wanted porosity in Regulon must have Kaff impurities to bring about reaction,

See page back

Regulon hot,

Will run hot 15 mins. than Test Regulon

#04 die crumps edges only
See How 4 die could used previously if was used with Smith previously die before proceed with 4 die

Smith very no small pressing die used. #02 presses center some #04 don't press Center at all only Edges

Doesn't work better yet. Heat packed up board in machine & Rocky Terrace Common Hydrate used

High discharge rate 100 amp 4 turns

750 rate	2		4		2		4	#14 Dicast Capacity high discharge rate	
20 X	1437	1712	1862	1875	1962	2125	2150	1962	
21 X	1412	1650	1725	1725	1937	2037	2112	1937	
22 X	1375	1600	1750	1725	1937	2137	2137	1937	
23	2113	2487	2493	2440	2873	2907	2833	2740	normal
24	2060	2380	2420	2313	2760	2833	2720	2600	
25	2347	2680	2613	2487	3027	2947	2853	2713	
26	2293	2573	2513	2387	2920	2853	2720	2607	
27	2213	2507	2447	2027	2867	2787	2687	2580	
28 X	1662	1937	1837	1750	2250	2250	2137	1950	750 rate
29 X	1587	1712	1937	1737	2212	2337	2125	2075	"
	10 14 out								1 at Hot
40	2193	1847	1867	1867	1920	1893	2233	2247	Hot Cap
40	1600	2053	2093	1867	2347	2400	2047	1940	normal
41	1700	2100	2120	1820	2400	2402	2053	2000	
42	1760	2120	2113	1867	2400	2400	2107	2107	
43 X	1350	1662	1662	1412	1812	1887	1675	1675	High discharge
			1550	1337	1625	1820	1562	1437	
44 X	1225	1537							
46	2187	2540	2540	2373	2647	2740	2600	2467	Normal
47	2207	2513	2513	2333	2653	2773	2633	2487	"
48	2133	2447	2533	2260	2620	2733	2533	2387	"
49	2167	2487	2487	2327	2620	2727	2453	2347	"
50	2093	2400	2413	2207	2600	2627	2400	2340	"
51 X	1500	1800	1862	1625	1862	2062	1800	1662	Highest
52 X	1562	1850	1862	1750	2000	2162	1937	1850	750 "
53 X	1500	1812	1825	1625	2000	2212	1937	1837	
54	1494	1746	1840	1586	1840	2040	1786	1746	800 Dicast
55	1534	1800	1826	1574	1960	2080	1800	1760	"
56	1440	1774	1940	1600	1974	2173	1774	1776	"
57	1494	1774	1866	1560	1960	2134	1774	1760	"
58	1520	1854	1934	1666	2106	2214	1934	1854	880 MC
74	1266	1694	1800	1534	1734	2080	1534	1574	
81	1248	1737	1756	1386	1734	1734	1400	1600	Grown
85	1200	1774	1786	1425	1894	1866	1294	1546	
127	854	1334	1280	1494					

349 Fred Ott - Experiment with Ferrocyanide Sulfate iron in pocket, crimped top of Ott die only to 6a

Run like 348 Switch — 750 Rate

	From Wkly Sht Ott #2		Ott #4		Reg Ott 2		Ott 4	
1	2000	2033	1967	1660	2667	2592	2587	2533
2	1987	2033	2133	1847	2120	2133	2173	2173
3	2000	2213	2160	1973	2113	2113	2213	2207
4 X	1312	1450	1287	1312	1525	1487	1450	1512
5 X	1275	1387	1287	1287	1487	1487	1462	1473
6 X	1312	1450	1525	1487	1287	1312	1450	1512
7	2213	2373	2460	2375	2353	2353	2567	2677
8	2067	2280	2327	2280	2233	2233	2387	2460
9	2347	2453	2475	2467	2453	2453	2520	2520
10	2147	2320	2407	2300	2413	2413	2387	2387
11	2107	2320	2400	2280	2413	2413	2513	2573
12	1437	1587	1650	1625	1625	1750	1775	1775
13	1412	1500	1612	1580	1615	1712	1787	1712
14	1350	1525	1637	1562	1687	1775	1837	1775
15	2200	2427	2547	2500	2647	2693	2713	2640
17	2267	2593	2687	2547	2847	2793	3147	2647
18	2367	2573	2647	2640	2800	2873	3067	2553
19	2347	2533	2587	2540	2773	2840	2920	2600

5% of the total MnO4.

As 1½% comes off surface this leaves 3½% Come out after 2.50 Comes,
12.5 grms MnO4
18 grms MnO4 2
less than 1½% of the total MnO4.

2 Cells that Smith some time ago took and regular clock formed up from endurance about 200 times, got a little lower than stated — Cut them open + found account —185 grms Sediment in Each A4 — Nearly Marked — Get explanation

Took 2 more A4 | opened them just ready to sleep — Cut open — following weights

#1	#2
25 grms Sediment	23 grms Sediment
1.4% Hg	0.7% Hg
22.39 Fe	15.39 Fe
45.19 Ni	52.05 Ni
0.3 insol	0.3 insol

Cell number 7318B 7444B

350E is Dup of Req 11044.
from Lake Ao 4968 -
Incident Light, to Cancel
the hot EGT

Req test it was	Cacd	10 Mint
50	1290	1463
1283	1293	1423
1287	1117	
	1067	

Jonathan Rutter

	V	.9 V	
173	175.5	182	
174	181.2	186	
176	183	186	
177	179	182	
178	175.7	179.2	
179	167.5	171.7	
180	185	188.7	
181	175.7	180	
182	175	180	
183	37.5	81.7	High rate
182	56.7	106.7	" "
185	43.3	103.3	
186	175	183	130 Fahr
187	175.5	192.5	"
188	180	186.5	"
189	177.5	184	"
190	180	187.5	
191	183.2	187.2	Normal
192	178.5	182.5	
194	174	178.5	
208	203.5	206.7	
215	200	202	
219	200	204	
260	198	202.7	
269	196	200	

Bismuth Cells seems no good on heavy discharge rate Think the Iron has gone bad - Put in 4th one 7 gram Iron

351 E

Bismuth Cells 2 Fahr to each Ni plate
Hydrate of Bismuth —

120 Fahr

Run	148 1 Volt	1/2	
# 148	199		Hot.
149	210.7		Normal Temp
150	161		
151	192		
152	193.5		
153	193		
154	192.5		
155	189.5		
156	189	191	
157	192.5	194.5	130 Fahr
159	193	195.5	"
160	183.5	187.5	"
161	183.7	187.2	"
162	187	188.5	"
163	194.7	200	"
164	202.5	205.5	"
165	192.5	197.2	"
1-0	197.5	202.5	"
167	191.5	195.5	Normal temp
168	185	190	"
169	179	183	"
170	170	175	"
171	172.5	178.5	
172	175	178.5	

352

	V	½	V	½	
6	70	96.5	70.0	96.6	
7	67.5	95.5	67.5	95.5	Get more uniformity on Number
8	75	97.9	76	97.8	
9	80	102.1	80	102.7	
10	84.2	107	84.2	107.8	
11	85	105.5	85	106.1	
12	85	107.5	85	108.2	
13	85	108.7	86	108.7	pretty good checkpoint
14	86.7	107.5	87.5	110	
15	85	107.5	86.2	111.2	
16	86.5	108	86.5	109	
17	85	106.7	87.5	107.5	
18	57.7	98.7	70	103	Highrate drop
19	64	98.7	70	103	
20	67.7	99	69	104	
21	95	106.7	95.7	110.6	Normal
22	93.5	105	97	107.5	"
23	92.5	104.5	96	109	"
24	96	105.7	97.5	109	"
25	97.5	107.2	98.7	109.2	"
26	94	106.7	96.5	109.5	"
27	94	104.7	95.2	107.2	"
28	94.2	105.2	94.7	107.6	"
29	92.8	103.7	95	108	
30	92.5	104.3	95	107.3	
31	97.2	108.2	96.8	111	
32	96.2	109.5	99.5	112.2	
48	98.5	106	100.6	109.2	
53	100	106.2	105	111.2	
57	103.2	108.5	102.5	111.7	
101	105.5	114.5	107.5	117	

352E

Indentation type pellets from New Mexico Engineering Co.

These 2 pellets were B4 & the Cutler well got considerably more pressure than it should & packed up Thicker than Indentation type for which die was used for

27	204.2	216	203.5	217.5	Highwater
28	115	198.5	110	197.5	
29	119	210	117.5	207.5	
30	152.7	161	152.5	156.7	130 Falls
31	154.2	156	147.2	149.5	"
32	148.5	156.5	146.2	149.2	
33	143.5	147.7	141	143.2	
34	144	147.7	140.7	142.5	
35	207	216	209	215	Normal Temp
36	198	212	198.5	212.5	"
37	205	226.7	203.5	217.7	
38	198	214.5	198.5	214	Normal
39	182.7	200.5	184	200	"
40	178.5	196	180	195	
41	206.7	220	206.7	217	
56	202	217.5	203	214	
63	212.5	224.5	211.5	221.2	
65	195	210.7	199	210.5	
105	190	204	192	204	
115					

Longitude

Important Tool to find out the Clock error, 354 in Bentley's Ac Lic

353—

OH No 4 die for Jones—

Ft 3011— Min 2.04—

Rem		1/2			
3	165	178	161.5	177.5	12 hourly
4	168.5	184.5	166.5	185.7	
5	170.5	186.7	170	186	
6	153.	—	147.5	—	7 Hourly
7	160.5	—	157.5		"
8	162.		161.2		
9	156.5		159		
10	182.5	208.5	185	208.5	
11	185	209.5	190	209.5	
12	187.2	203.5	185.2	201	
13	197	208	196	207.2	
14	194	206.2	194	206.	V to ½ 13
15	198	211.7	200	213.5	
16	192	205	192	205	
17	198.7	210	198	210	
18	200	210	200.5	211.5	
19	198.7	210	198	210	
21	206	217.7	206.7	220	
22	200	210.7	201.7	213	
23	206.5	216.2	206.5	217.5	
24	201	211.5	201.2	214.7	
25	203	215	203	216.5	
26	205	217	205	218.5	

21	207	219	203.2	212.7	
22	205	214	200	211	
23	210	220	207.5	218.7	
24	205	215.5	201.2	214.2	
25	208.2	217.2	203.	216	
26	208	218.5	202.7	216.2	
27	207.2	218.2	203.2	215	
28	115	205	120	206	
29	116.7	213.3	117.5	213.3	
30	153.2	154.9	154.2	160	
31	148.2	151	154.7	156.7	130 Falls
32	147.7	150.7	152.5	155.7	"
33	142	144.5	148	150.5	"
34	142.5	145	148	150	Normal Lamp
35	210	218.2	206.5	214	
36	197.5	213.5	196.7	214	
37	203	219.2	200	224	
38	200	216	197.5	216.2	
39	185	201.5	181.2	202	
40	181.5	197.5	177.5	197.2	
41	207	218.2	205.5	218.2	
56	203.5	216.5	200	210	
63	212.5	223.5	210	222	
65	199	213	198.2	211.5	
105	193.7	207.3	193.2	206.7	
115					

OK Cuf @ Ocma found OK —

354 — from Mix 2109 find out

Yz! / 3011 - Mix 2109

Thank Mr. Mitchell here

code like receive #4

Reg Corrugated Cable

+ Reg Mix Cooling Water Cable

Check on 2/53 E

3	172.5	183	170	181.2	
4	181.5	193	174	190.5	
5	179	192	175.2	190.5	7 Hour Chg
6	160	—	157	—	"
7	167.5		165		
8	165		163		
9	167		162.5		
10	192.5	209.5	187.5	205	Long Chg
11	195	209.7	190	207	
12	191	202.5	186.5	202.5	
13	197	208	194	207	
14	195	207.5	192.5	205.5	
15	201.5	214.2	196.2	211	
16	195	208	191	203.7	
17	200	211	197	209.5	
18	202.7	210	199.2	212	
19	201	211.5	196	206.5	

355

6	73	98.2	73	97.7	
7	87.7	96.2	87.5	97.0	
8	77.5	100	75.5	98.6	
9	82.5	105	82.5	103.7	
10	87.5	110	87.5	108.7	
11	87	106.7	85.5	106.	
12	87.5	109	87.5	108	
13	87.5	109	87.5	108.7	
14	91.7	110.7	92.5	110	
15	88.7	111.5	90	110.2	
16	90	110	90.7	108.7	
17	89	110	89	110	
18	65	103	63.2	103.5	Highly dried
19	70.5	103	70	105	
20	69	104.7	70	109.7	Harvested
21	95.5	109.6	96.1	106.5	"
22	97	106.5	95.5	107	"
23	96	107	96.3	107	"
24	97.5	106.7	97.1	108	"
25	98.3	108.7	98.7	102.5	
26	96.5	107.0	96.7	105.7	
27	96.5	105.2	97	106.6	
28	95.3	105.5	95.7	105.7	
29	96.2	106.5	96.2	105.3	
30	95.2	104.7	96	110	
31	98.3	110	95.5	110.5	
32	99.5	110.5	100	106.7	
48	100.6	107.2	100.6	107.7	
53	101.5	108	101.5	109	
57	104.2	110	104.2		

355-

2-BH with NO4 att die for preserving rows- Edge Crimping

101	102.5	109.2	101.	106.7

356 E

Single B4 4E plate
Crimped w/ det. acc #1
Edge Crimp die pick up
with 7a Nickel

1	27.93	
2	22.80	
3	21.25	
4	21.26	
5	21.26	
6	21.86	
7	21.19	Co

qp

29	1425	1450	1550	1550	750 rate
30	1575	1587	1687	1700	"
31	1687	1687	1612	1725	"
32	2200	2225	2225	2215	normal
33	1945	1975	1965	1955	
34	1920	1700	1725	1730	
36	1162	1125	1250	1275	Double Hydrate
38/37	1400 1450	1312 1387	1487 1475	1475	
39	1920	1925	1925	1920	normal
40	1875	1865	1875	1865	
41	1735	1735	1840	1845	
42	1730	1790	1795	1790	Hydrate.
43	1785	1785	1795	1795	"
45	1375	1400	1525	1527	

Cut out

1890 1500

357E

~~1537 1425~~

~~1462~~

Pocket. .105.

Grid from .015 slack proceed at 5 ~~[illegible]~~ Trim with ~~[illegible]~~ 2 disc with bed of which thin strips were pulled

Mix # 2953 — Crimped without # 2 die

	V	½		
4	1685	1845	1665	1857
14	1550	1550	1625	1637
15	2190	2190	2195	2180
16	1985	1985	1995	1975
17	1820	1880	1875	1890
18	1775	1760	1775	1760
19	1690	1680	1655	1685
20	1187	1125	1237	1212
21	1475	1300	1537	150
22	1562	1412	1680	1587
23	1985	1890	1900	1890
24	1885	1890	1880	1880
25	1600	1550	1550	1590
26	1840	1835	1865	1865
27	1890	1880	1895	1890

750 rate
"
"
"
normal
"
"

	V	½	V	½	
17	193	199	191	196.5	
19	191	198.5	190	198	
21	126.7	201.5	126.7	202.5	High dischg rate High discharge 100 amp
22	128.2	201.5	126	200	"
23	120	205	120	200	"
24	116.7	201.7	116.7	200	"
25	123.3	203.3	118.3	201.7	"
26	116.7	201.7	108.3	201	"
27	123.3	205.5	120	201	"
28	111.7	202.5	111.7	202.5	
29	111.7	205	106.7	204.2	
30	109.2	203.3	108.3	204.2	
31					
32					
33	108.3	204.2	110.7	204.2	
34	101.7	197.5 .9 Volt	96.7	197.5 .9 Volt	High rate
80	80	183.3	63.3	178.3	208½ "
66	65	195	57.5	170.	212½ V 212.5 High rate
114	60.7	131.7	54.2	115	2.62 "

Set aside

358F Left from cover

Lake cells 20% Tin oxide mixed with 6% Hg- Miller # 2109 Expt -

2 Cells Alk made up with #4 cell Cuming dia pkg & green packet

	V	½	V	½	
1	195	197	196	199	Note small dif between Volt + ½
2	197.2	204	200	204.2	
3	181.5	184.5	186	188	
4	177.5	179.5	179	182.7	
5	187.5	190	187	189.7	V to x 2½
6	197.2	188	185	187.2	
7	182.7	188	182.5	185.2	
8	148	148.5	158	160.7	at 130° Fahr
9	158.7	160.5	161.5	164.5	"
11	193	197	192.2	196	Normal
12	191.5	198	191	197.5	
13	182.7	187.7	182	186.5	
14	188.7	195	182	187.5	
15	187.5	193.5	187	192.7	
16	188.2	196.7	187.5	195	

	V	½	V	½	
25	200	220	198	210.5	
27	190	207	188	205.5	
28	193.5	211	190.5	206	
29	193				
30	195	202.5	190	200.5	
31	200	213.7	198.7	211.7	Chgd 30 hour
32	201.2	214.5	197.7	211.2	15 "
33	199.7	214.2	197	208	12 "
34	195.5	209.5	194	206	"
35	196	210	195	206.2	"
36	190	203.5	188	201.5	7 hours
37	199.5	212.7	198.2	207.7	"
38	201.2	214.7	199	210.5	"
39	196.5	210	193.2	205.2	"
40	166	174.5	165.2	173	-130 Fahr
41	161.7	165.7	159.5	163.7	
54	75	194 dr 130.5	75	130.5	208½ High rate
65	200	217.5	195	213.5	Normal
100	192.5	210	190	207	

7z

359E

Negative plates, Regular pressed A4 cells + Corrugated for Comparison with 360 & 361 grams

	V	½	V	½	
1	212.5	221	212	220	
2	178	189	178	189	
3	167	183	167	183	
4	165	192	166	193	
5	167	186	167	185	
6	153	—	153	—	
7	156	—	156	—	
8	158	—	158	—	
9	160	186	157	184	
10	185	207			long charge
11	180	207	190	205	
12	180	205	180	203	
13	180	202.2	180	198	V 4½ — 20@1r
14	200	216.2	198	213	
15	183	203	190	205	
16	193	208.5	193.5	208.2	
17	200	215	197.7	213	
19	200	208	198.7	207.5	
20	196.2	207.5	195	204.5	
21	200	213.2	195	205.5	
22	200	213.5	198.2	210	
23	201.5	215	201.5	212.2	
24	202.5	216.2	201.5	212	

	V	½	V	½	
25	195	210.5	197.7	215	
27	190	201.2	188.5	205	
28	189	202	192	206.5	
30	193	201	192.5	205	30 hour
31	196.7	208	198.7	211	15 "
32	197.2	207	200	211.5	12 "
33	196	206.7	197.5	210	" "
34	193.7	203.7	195	206	" "
35	193	203	195	206	7 hour
36	186.2	197.5	187.5	201.7	" "
37	196.5	205	198.2	209.2	" "
38	198.5	208.5	199.5	211.2	
39	193	203.5	195	207.2	
40	165	171.2	166.7	172	130 false
41	156.2	162	156.7	162.5	"
54	98.3	.9 volt 131.7 ½	83.2	.9 volt 132.5	210½ Highest rate Normal
65	195	212	195	214½	
100	188.7	203.7	191.2	201.5	

360 F Reg plates A 4 proceed in die lake #4 off 8 gram packet.

	V	½	V	½	
1	212	220	217	224	
2	178	188	178	190	
3	168	181	168	184	
4	167	190	167	193	
5	167	181	167	184	
6	153	—	153	—	
7	154	—	154	—	
8	157	—	157	—	
9	158	183	160	185	
10	180	205	185	209	Long chg
11	180	205	181	209	
12	178.5	201	180	204	V+½ 23-
13	175	198	178.5	201	
14	195	212.2	200	215.5	
15	190	207	193	211	
16	193	205	193.7	209	
17	196	211.5	200	213.7	
19	195	204.7	198.7	207.7	
20	190	204	195	205.7	
21	195	207.5	200	211.2	
22	195.7	205	200	211.5	
23	193.7	201.5	197.2	212.2	
24	200	206.5	210.7	215	

Use 115 alum on single packets

area of Ram = 5.95 square inches

10 acc Lbs approx

25	200	215.5	203.5	219	30 hours
27 28	195 192.5	207 206.5	195 194.5	209.5 214.5	15 "
29	193	208	196.5	214	12 "
30	194.5	207.5	199	209.5	"
31	202.7	216.2	205.2	219.2	"
32	201.2	214.5	203.2	219.5	7 hours
33	200	214.7	201	213.2	"
34	197.7	208.5	198.5	209.7	"
35	196	207	196.5	210	"
36	190	207	191.5	204.5	"
37	199.2	212.2	200	214.7	
38	200.5	212.7	203	217	
39	195	208.2	196.7	210.7	13a Tahiti
40	158.2	163.5	158	164	"
41	161.7	165.7	159.5	163.7	
54	76.7	137.5	75	135	214½ Hughes
65	195	215	200	218	Normal
100	190	208.2	191	209.2	

361E A4 Neg plate pressed in die Lake Ott #4 7 gram packets

	✓	½	✓	½	
1	202	213	205	218	
2	192	199	192	202	
3	177	186	177	186	
4	177	187	178	187	
5	173	177	173	177	
6	165	—	164	—	
7	—	—	—	—	
8	165	—	165	—	
9	173	184	173	185	
10	185	197	183	198	Long alley
11	185	201	187	206	
12	188.5	201	190	203.5	Va ½ 13@15
13	188	201.5	189	204	
14	190	200	190	202.2	
15	195	205	195	211.2	
16	193	204.5	194.2	206.2	
17	192	203.2	192.7	206	
18	197	208.5	198.5	212.2	
19	192.5	203.7	194	206	
20	182.7	192.2	183.5	193.7	
22	205,5	216.5	207.7	218	
23	199.5	211	200.7	213.2	
24	195	206.5	195.7	209.2	

Ram 12" Dia - 120 Tons on gauge in making A4 ¾ plate.

The cramp part on edge of pockets is 10.5 inches — 24
11.4 Tons per square inch

On A4 will put 160 Tons
on B4 80 Tons —

Ott 333-4-5" only had equivalent of 120 Tons

362F

2 Required 7/2 7 grooves
pocket reads with #4 at Cdiz
smooth pieces afterwards
to be run 1st 5 Runs hot
at 130 Fahr & then normal

	V	V	
1	2467	2720	130 Fahr
	1513	1500	at 35° deg Fahr
2	2613	2753	130 Fahr
~~3~~	113	120	35° Fahr
3	2380	2693	
4	2460	2800	
5	2487	2920	130 Fahr
6	2040	2100	normal
7	2000	1993	
8	2013	2087	
10	1375 1437	1500 1477	Decahydrate hydrocarbon
11	2380	2387	normal
12	2347	2367	"
13	2427	2533	"
14	2400	2453	"
15	2320	2353	"
16	1812	1937	Heptane
17	1862	1937	"
18	1750	1962	"
19			

Hot
130 Fahr

2 Checks

130

.012

363 E

Same as 362 E

But 1st 5 Runs are to 42.

run Cal. 35° Tahoe Follow

Normal

	V	V	
3	913	1447	35° dry
4	907	1113	"
5	933	1467	"
6	2267	2533	Normal
7	2000	2267	
8	1860	2133	
10	1162	1417	Dandy Highrate
11	1225	1470	"
12	2073	2390	Normal
13	2093	2253	"
14	1993	2233	"
15	2087	2187	"
16	1980	2107	"
17	1325	1687	Highrate
18	1362	1653	
19	1362	1662	

364 – Dup of 362

But damned normal 3 Run
& whole face of perfect
Cut away & Clean
Run normal to Cuo
Heat,

Whereas now

Of the 3 ways of forming 362-363-365
the last 365 seems to be the best
high density rate

Something in this way
of forming cells ? ?
Try A4 — New #4 die

Cut 365
get space/pocket
cut away

93	2227	2387

365 E same as 362 E
But 1st 5 Runs to be at
600 rate & then new normal

	V	.8	V	.8	
1	1760	2213	1600	2013	Normal
2	1573	2053	1573	2026	800 Rate
3	1534	2040	1560	2026	"
4	1600	2119	1600	2119	"
5	1600	2066	1600	2066	" normal
6	2160	2133			normal
7	2093		2007		"
8	2113		1984		"
10	1462		1550		Density high rate
11	1450		1625		"
12	2400		2367		Normal
13	2267		2247		"
14	2433		2367		"
15	2393		2373		"
16	2353		2267		"
17	1812		1812	High rate	
18	1862		1862	"	
19	1825		1837	"	
20					
21	2453		2287		
22					
23					
24	2507		2373	Normal	
40	2487		2287		
51	1945		1962	High rate	

	a		B Cells		C		
1	225	231	225.5	233.5	225	232	Normal
2	175	178.5	175.5	177.5	154	157	
3	165	184	165	172	136.5	138.5	
4	158	182.5	164	179	143.5	156	130 Fahr CHD
5	171.5	196.5	172	191	178	201.5	Normal
6	172.5	195.5	170	192	167.5	198	
7	186.7	210	183.7	206.7	178.5	211.2	
8	180	196.7	180	196	173.7	200.5	
9	181	199	185	200.7	178.5	206.5	
11	184	200	185	200	180	205	
12	193.5	209.5	194.2	210.5	189	212.5	
13	195	208	195	209	190	216	
14	192	209	192	209	185	215	
15	192	205	192	203	185	210	
16	190	205	193	205.5	187	212	
17							
1	225	231	225	234	226.5	235	Normal
2	156	159	70	113	70	114	
3	130	135.5	73.5	136			
4	125.5	127.5	31	78	30	54.2	30° Fahr
5	180	200.5	172.2	197.5	175	199.7	Normal
6	170	196.5	167.5	185	167.5	186.5	"
7	180	208.5	181.5	197.2	180	199.5	"
9	177.5	200	178	195.2	178.5	191.5	"
11	179	203.7	183.5	195.5	183.5	197.7	"
12	180	202	184	195	185	197.5	"
13	190	213.7	196	206.2	192.7	207.7	"
14	191	212	188	204	188	205	"
15	188	211	191	204	187	205	"
16	183	208	191	201	192	202	"
17	181	207	190	196	191	196	"

366F

6 A4 Cells 7 gram packed -
pressure 160 Tons Less Crimping
die off #4 - afterwards pressure
with Cat die 120 tons -
Cells decoated to distribute Lithia

	V	1/2	V	1/2	
	225	231	225.5	232.5	Normal
2	175	178.5	178.5	177.5	normal at 130° Fahr
	154	157	156	159	
	70	113	70	114	at 35° "

1st 2 Runs Normal on 2nd Run
2nd 2 Two runs 130 Fahr
3rd Two cut 35° Fahr -

A

A 367 B

3 ~~88.7 97.7 88.7 98.7~~ Forward

367-F

6 B4 Cells 5.3 gm Packed —
Pressure 80 Torr @ CC #1 Die
Infiltrated Cell die 60 Torr
Cells loaded to Indicate
Lithia —

Dec further on

368 E

Short tubes 2 cells soaked
24 hours in CaCl2 Liq,
then put in ZIKZLi 4 pct right
away Run Reg

Short grown cells in these cells
Needle need die Eff # of 4 grown

1	1010	1033
2	1193	1207
3	1200	1210
4	1223	1233
5	1267	1273
6	1267	1273
7	1290	1300
8	1340	1343
10	1343	1347
11	1353	1357
12	1373	1380
13	1390	1390
14	1400	1400
15	1400	1400
16	1390	1390
27	1480	1500
100 K	1267	1263
125	1267	1233

Nothing in it.

Hot Cap 660-697

100 # at room Hot 643 587

369E

2 A4 Reg cell ~~no plating of Ni on plate tubes rusp~~ ~~effect parts of cells~~
Except ~~the~~ No Mercury in the Iron

370 E

2 Cells no marked coloring on any part of cathode Elements

	12 hour				7 hour	
	V	½ V		½ V		V
9	172	177	170	175	159	158
24	176	182	175	184	156	151
39	181	191	178	186	159	156
67	156	180	170	180	135	150
120	175	185	170	180	153	144
245	148	166				
2						

Don't appear to be good

	V	.9V	V	.9V	V	.9V
40	92.5	95.8	83	87.5	89.5	92.5
40	90.7	94	81.2	84	88.7	92
51	90	93.2	80	82.5	86.2	900
92	88	89.7	80	82.5	83.5	86

341 - Set aside

134 Brunswick Cells Healthy (mm)

	V	1/2	V	1/2	V	1/2	
1	84	86.7	84	87	83	86.1	
2	85	87.2	81.2	93.8	80	92.7	
3	85	93	81.2	89	78.7	87.5	
5	88.2	94	84.5	90.5	81.6	89.2	
6	90	97.5	84.2	90.8	82.5	91.2	
7	90	98.8	90	99.5	85	91.7	130 Fahr
8	82.5	92.5	88.5	94.5	75.5	88.	
9	79	87.5	80	88	72.5	81	
10	80.3	81.5	65	74.7	72.5	80.3	130 Fahr
11	81	91.5	72.5	84	76.2	83.2	11
13	75.8	81	64	68	69.3	77.8	Normal
14	80.3	87.5	72.5	77.7	74.3	88	
15	85	92.1	77.7	9V 82.5	80	9/10 V 87.5	
16	85.2	88.7	75	80.7	82.5	86.7	note .9V
17	89	95.2	82.5	89	88.1	90	
19	85	89	75	82	79.5	85.5	
19	85.5	91.7	91.2	79	78.5	89	
20	84.7	89.2	75.0	81.7	81.7	87	
21	83.7	88.7	73.7	79.8	80	86.2	
22	84.5	89	76.2	80	81.2	86.4	
23	87.8	93	77.5	83.7	85	89.6	
24	85	90	76.5	82.5	82.5	87.5	
25	86.2	90.7	80	84.2	84.2	89	

333X Smg B iron plate

333X pressed in die Lake #Ott 4
334X 1st with Conn die then #4 Ott
335X " Ott 4 then with flat die
336X " Ott 4 — then with Smg Corrugated.

333X

High rate decay

3	24.14	24.37	12	20	36.25	20	37.12	
4	24.06	26.17	14	25.50	40.43	25.45	46.5	Normal
5	24.38	26.63	15	32.50	33.00			
6	23.63	25.61	16	30.86	33.20	Normal		
7	24.37	26.80	17	31.25	33.55	Normal		
8	25.61	28.22	18	30.62	33.30	"		
9	25.01	26.97	19	30.00	32.61			
10	25.0	25.13	20	28.24	30.2			
11	25.61	26.65	21	29.69	31.69			
12			45	30.64	31.21			
			80	29.63	30.72			

334X

High rate decay

3	23.01	22.58	12	15.38	27.38	17.51	30.80	High Normal
4	22.01	22.20	14	18.75	31.75	24.44	35.00	
5	22.50	22.61	15	27.50	30.29	Normal		
6	21.26	22.50	16	26.25	28.76	Normal		
7	21.25	22.50	17	26.87	29.40	"		
8	21.26	23.57	18	23.12	25.75			
9	19.05	23.74	19	21.66	28.21			
10	16.95	23.50	20	22.58	25.19			
11	21.26	23.14	21	24.80	27.19			
12			45	25.57	28.47			
			80	26.57	27.81			
			86	29	32			

Find out what these are

Evidently no improvement over Reg old Lea Commingling

335X

High rate decline

3	23.67	22.95	12	22.5	37.06	22.5	37.75
4	25.82	25.45	14	26.74	40.67	26.25	41.00
5	26.57	25.93	15	33.00	32.50		
6	25.75	25.01	16	32.45	32.51	normal	
7	26.70	25.62	17	33.35	32.27	"	
8	27.70	27.02	18	33.35	31.90	"	
9	26.63	26.63	19	31.69	31.17		
10	27.64	27.11	20	29.89	29.36		
11	27.00	27.00	21	31.08	30.57		
12	~~23.45~~	~~27.06~~	45	30.64	31.07		
			80	30.26	30.44		
			86	32.69	32.57		

336X

High rate decline

				V	1/2 V	1/2	
3	22.95	20.44	20	36.25	20	37.5	12 — 14
4	25.47	22.20	25	38.06	25.01	41.00	
5	25.93	23.44	15	31.87	31.22		normal
6	25.01	22.50	16	30.81	30.00	normal	
7	25.62	22.80	17	31.25	30.42	"	
8	27.02	24.38	19	30.00	29.95	"	
9	25.61	24.38	20	25.19	29.71	"	
10	24.77	23.87	21	29.69	28.01		
11	26.57	24.45	45	30.77	29.36		
12		~~24.56~~		32.17	30.00		
					31.61		

177

From 372 to 377 - green put in the Vernon Cone dol - all cracked around walls, soaked 2 days - then dryed after pouring all liquid poured off - then dried a bit then 30 mesh - Then let to present Crushing Too much of the green & yielding lower Loading weighed more promptly -

372 E Reg green soaked Cone RCP left in - to back up & get low loading lot - tubes before assembling soaked in water for 48 hours & then broken & then taken and a ~~[illegible]~~ Loading lot

21 K 2 Li

1	667	640	10	1083	1097	7.566	7644
2	833	807	11	1100	1120		
3	893	900	12	1100	1117		
5	987	960	13	1147	1180		
6	1003	993	14	1123	1167		
7	1007	953	15	1130	1167		
8	1026	1027	17	1157	1167		
9	1063	1070	33	1216	1250		
			40	1237	1240		
			44	1210	1240		

373 E Reg green soaked RC thin walled

1	827	757	15	1297	1218	7654	7679
2	1007	997	17	1320	1233		
3	1073	967	33	1350	1280		
5	1150	1047	40	1350	1307		
6	1157	1073	44	1325	1273		
7	1173	1083					
8	1190	1107					
9	1220	1137					
10	1247	1160					
11	1260	1177					
12	1260	1173					
13	1307	1277					
14	1290	1203					

374 E Rag straw soaked K Nitrate

1	783	550	13	1217	1067	K Weeglet
2	950	719	14	1260	1057	7.655 7.650
3	1007	810	15	1273	1067	
5	1100	980	17	1283	1090	
6	1117	913	33	1333	1190	
7	1127	933	40	1307	1157	
8	1147	953	44	1313	1210	
9	1180	960				
10	1210	1013				
11	1223	1030				
12	1227	1030				

175 E Rag straw soaked K Sulphate

K+Wf
7.716. 7.726

1	553	560	15	1200	1063
2	807	720	17	1230	1090
3	927	807	33	1287	1160
5	1040	890	40	1273	1287
6	1063	907	44	1290	1177
7	1080	973			
8	1103	947			
9	1133	963			
10	1167	1017			
11	1167	1017			
12	1153	1028			
13	1210	1057			
14	1193	1050			

Evidently the Greenwafter Mfg of marked with the normal substances

342 to 344 – neither impressed or go bad, in fact do not change

376 E Reg Ni green marked K Brownish

						2 wt
1	690	697	13	1230	1267	7.775
2	873	890	14	1213	1247	7.790
3	943	967	15	1217	1250	
5	1037	1073	17	1253	1280	
6	1053	1090	33	1300	1323	
7	1067	1100	40	1277	1297	
8	1093	1130	44	1280	1290	
9	1127	1160				
10	1153	1193				
11	1180	1210				
12	1157	1217				

374 E Reg Ne green marked K Greenish

						4 wt
1	873	890	15	1293	1310 -	7.873
2	950	960	17	1327	1350	7.862
3	980	987	33	1307	1290	
5	1017	1023	44	1257	1267	
6	1033	1043				
7	1047	1033				
8	1087	1100				
9	1127	1140				
10	1140	1183				
11	1207	1217				
12	1233	1247				
13	1293	1313				
14	1277	1293				

378

14			
15			
16	2107	1957	
17			
18	2180	2100	
19	2167	2100	
35	1980	2193	
46	1250	1562	Heyderate
88	2067	2047	Normal
96	1767	1713	

379

14			
15			
16	2247	2127	
17			
18	2500	2297	
19	2473	2300	
35	2487	2367	
46	1962	1775	Heyderate
88	2393	2360	Normal
96	2107	2093	

378E 4 grain plots 2 of 3 each rep. Checked dien

1	2353	2353	
2	1700	1650	
4	925	912	Heyderate
5	1050	1037	" "
6	1023	1005	
7	1867	1833	Normal
8	1840	1800	
10	1920	1833	
11	1873	1833	
12	1325	1187	Heyderate
13	1350	1225	

379E 4 grain plots 2 of 3 rep each

1	2427	2380	
2	1867	1833	
4	1000	1000	Heyderate
5	1087	1050	" "
6	1112	1100	
7	2000	1940	Normal
8	1987	1900	
10	2113	2000	"
11	2120	1993	
12	1525	1437	Heyderate
13	1625	1477	

14			
15			
16	2340	2253	
17			
18	2520	2400	Normal
19	2480	2350	
35	2500	2233	
46	1695	1712	High rate
85	2400	2347	Normal
96	2187	2000	

Light load pressure test Capacity = high density grade

380 E 4 grain PRC 2 cut
125 actions

1	2520	2433	
2	1967	1947	
4	1250	1162	High rate/high grade
5	1312 1350	1175 1250	" "
6	2240	2200	Normal
8	2200	2087	"
10	2253	2193	"
11	2213	2167	
12	1687	1525	High rate
13	1750	1625	

381 E 2 A4 - 7c pics 6 cuts x
ground off same as tube cross
to be run seq then at 750 rate
per 7c packet -

101	159	217	153	210	750 Map per set
107	160	212	153	207	

382 E

Req clicks to check 381 E

101	155	208	154.5	205
107	159	207	145	201

B45 5.3 gpm 72 ott 4 80 Tons

367 CD

AB formed normal Tocomp
CD n 130 deg
DEF 135° deg

	C V	C ½	D V	D ½	
1	63.5	64.5	64.2	65	at 130° Failure
2	62.5	64.2	61.5	62.7	"
3	59	59.5	61.5	62.1	"
4	61	62	63	64.2	
5	89.2	94.5	86.7	97	
7	89.2	98.5	87	101.2	
9	93	105	96	103.5	
11	95	107	98	110	
12	95	107	97	110	
13	95	107	97	110	
14	96.5	108.2	99.6	111	
15					
16	97.5	109.5	100.5	114.2	
17	100	111	102.5	116	
18	100	112	102.7	115.2	
31	102.5	113.6	106.5	118.6	
40	107.2	118.7	109.7	122.2	
77	107	117	108.5	121	
84	105	115	107	120	

Normal but different heat

367 AB

	A V	A ½	B V	B ½	
1	111	115.5	107.5	114.2	Normal Temp
2	100	102.5	100.7	106.2	"
6	88.7	97.7	88.7	98.7	" "
4	95.2	109	95.2	112	
5	86.7	101.2	86.7	102.5	Normal
7	91	101.7	91.7	104.7	
9	96	105.7	97	108.7	
11	98	107	100	107	
12	97	107	100	110	
13	97	106	100	109	
14	99.2	107.5	101.7	110.2	
15					
16	100	108.5	101.5	111	
17	101.6	110	102.5	110.5	
18	102.5	110.5	102.7	111.5	
31	101.8	109.7	101.8	112	
40	106.2	114.2	107.2	117.7	
77	108.2	117.5	108.2	118	
84	105	114	107	115	

367 EF

	E		F		
1	47	59.2	45	58.7	35° 7 cells
2	47.5	63.5	47.5	63.2	"
3	43.2	63.4	40	59.5	"
4	42	64.5	37.5	60.7	"
5	91.2	98.7	90	97.5	normal
7	88	91	87.7	91	"
9	91.5	96	92.5	96.7	"
11	94	98	95	99	"
12	95	102	95	100	"
13	97	99	95	99	"
14	97.5	102.2	97.5	104.3	"
15					
16	98	103	98.2	103.2	
17	99	104.3	100	104.2	
18	100	105.8	100.2	105.	
31	99.6	106.8	98.5	104.6	
40	102.5	108.7	102.5	109	
77	103.7	113.2	104.3	114.2	
84	102	111	104	114	

381-E A+B —

2 Reg Checkcells

2 Spacer Cells between groups of 2 compartments -

335

53	3067	2200	Normal
55	2087	1187	
56	2170	1212	
57	2162	1300	High decay rate
58	3133	2367	Normal
59	2947	2307	"
60	2993	2347	"
61	2933	2373	
62	2867	2287	
63	2125	1287	High rate
64	2250	1412	"
65	2150	1412	
66	3053	2280	Normal
67	2913	2233	
82	2960	2987	Normal
88	2212	2200	High rate
91	2653	2700	

333

	110	2613	2567
High rate	114	2062	2062

334

	110	2660	2533 Normal
High rate	114	2000	1862

336

53	2967	3020	Normal
54	2037	2162	High rate
56	1937	2225	"
57	1925	2187	"
58	2900	3133	Normal
59	2600	2947	"
60	2487	3013	"
61	2267	2933	"
62	2267	2867	"
63	1487	2225	High rate
64	1537	2312	"
65	1375	2337	"
66	2287	3073	Normal
67	2013	2907	
82	2307	2913	Normal
88	2300	2137	High rate
91	2800	2713	Normal

	A	A	B	B	C	C	D	D	
	182.5	197.7	183	198	181.5	204.2	181	201.7	
.20	197	211.7	196.7	212.2	194	220	194.7	216.7	
.21									
.22	46.7	175.8	45.8	175.8	45	166.7	45	161.7	100 clump
.37	218	225.7	211.2	227.5	209.7	233	208.2	228	
47	197.5	211.5	195	213.5	197.5	218	197.5	213	
90	194	268	194	209	192	211	193	209	

	E	E	I	
	181.7	194	182	195
.20	195.5	207.5	195.7	210
.21				
.22	45.8	175	45.8	176.7
37	218	222.2	211.2	225
	197.5	210	197.5	212.5
	193	205	193	207

treatment may not be relevant

two mixed

[ITEMS(S) FOUND IN BOOK]

August 13, 1914.

WNA-16-4349

Messrs. Edison-Bachman-McClain-H.H.Smith and file-

Request Mr. Edison S.O. #4867-E
Make up 2 A-4 cells.

#704 Mach. Special Iron Mix Exp. #2109

Dumps 15-25) A pocket
Weight 7.768)

Remarks- Gritty greyish iron, very bulky pockets and iron both became slightly warm.

#824 Ni.(OH)2 = .02853 per dump
Lot 266 Ni.Flake = .00371 " "
Dumps per tube =313
Weight " " =10.685

Serial numbers from H. H. Smith.
S.P. #60 and S.P. #61
Sent to Research Dept. August 13, 1914.

W. N. ARCHER.

[ITEMS(S) FOUND IN BOOK]

August 13, 1914.

WNA-16-4348

Messrs. Edison-McClain-H.H.Smith-& file:-

Request Mr. Edison S.O. #4813-E.
Make 4 A-4 cells.

2 cells regular factory stock
2 cells special and use pocket stock which has been ground
#729 Mach. #2989 Iron mix

Dumps 12-16)
Weight 8.265) A pockets

Remarks loading O.K.

#824 Ni.(O.H.)2 = .02853 per dump
Lot 266 Ni. flake = .00371 " "
Dumps per tube = 313
Weight " " = 10.583

2 regular cells factory serial (#8382B & #8383B.
2 special cells ground pocket stock serial numbers from
Mr. H.H. Smith. S.P. #56 and S.P. #57
Sent both sets to research August 12, 1914.

W. N. ARCHER.

[ITEMS(S) FOUND IN BOOK]

11-12-14

Fe Expts.

		1 Volt	½ Volt
366 A	Run 42	198.5	212.7
" B	"	198.7	213
" C	"	199.2	219
" D	"	198.2	214
" E	"	198	210
" F	"	199	212

		1 Volt	½ Volt
367 A	Run 36	103	109
" B	"	104.2	113
" C	"	104.6	114
" D	"	105	119.7
" E	"	100	105.7
" F	"	99	105.2

		at Normal rate
378	Run 41	2000-2198
379	"	2447-2373
380	"	2513-2267

[ITEMS(S) FOUND IN BOOK]

11-12-14

The Experiment

Exp. 66-1 (The Hydrogen — Ammonia)

	12-hour change		7-hour change	
	1 Volt	½ Volt	1 Volt	1 Volt
Run 169-170	171	.185	170.5	186	164.2	164.2

[ITEMS(S) FOUND IN BOOK]

11-12-14

Fe Expts

		1 Volt	½ Volt	1 Volt	½ Volt
353	Run 62	205.7	220	205.2	217.5
354	"	207.2	218.5	206.2	219

At high rate

		1 Volt	.9 Volt	.5 Volt	1 Volt	.9 Volt	.5 Volt
358	Run 60	70	165	206.7	60	160	206.7

At high rate

		1 Volt	.9 Volt	.5 Volt	1 Volt	.9 Volt	.5 Volt
359	Run 60	68.3	125	213.2	68.3	120	203.2
360	"	68.3	118.3	200	68.3	125	206.7
361	"	75	133.2	225	68.3	135.8	226.7

At normal rate

365 Run 46 2573-2447

[ITEMS(S) FOUND IN BOOK]

11-12-14

Ni Experiments

Exp. 240 (Cobalt) Run 113

	1 Volt	9/10 Volt	1 Volt	9/10 Volt
Actual	175	190	174.2	188.8
Equivalent	187.5	203.5	186.7	202

Exp. 351 (Bismuth) Run 214

1 Volt	9/10 Volt
200	203.8

Exp. 371 Run 46

1 Volt	9/10 V	1 Volt	9/10 Volt	1 Volt	9/10 Volt
91	95	80	88.7	87.5	91.2

372	Run 39	1207 - 1230
373	"	1320 - 1267
374	"	1343 - 1223
375	"	1317 - 1207
376	"	1327 - 1350
377	"	1340 - 1330

[ITEMS(S) FOUND IN BOOK]

Nov. 12, 1914

Fe Experiments

333X	Run 41	31.61-32.74
334X	"	27.70-29.89
335X	"	31.69-31.73
336X	"	30.83-31.24

		At normal rate
333	Run 109	2533-2413
334	"	2533-2387
		At high rate
335	Run 87	2025-2025
336	"	2212-2037

				At 800 M.A.
349	Ott #2 Die	Special	Run 80	1254-1760
	" #4 "		"	1774-1360
	" #2 "	Regular	"	1814-1840
	" #4 "		"	1386-1626

[ITEMS(S) FOUND IN BOOK]

11-12-41

Fe Experiments

348E

At 750 M.a.

	Run 71	72	73	74	75	76	77	78
Regular	2693	2600	2540	1850	1862	1950	2660	2573
"	2647	2587	2500	1862	1862	1950	2623	2533
"	2640	2520	2387	1850	1762	1775	2613	2527
"	2187	2320	2167	1637	1412	1487	2155	2113
OH = 2Hz	2907	2813	2707	2125	2037	2125	2773	2700
"	2800	2767	2613	2062	1962	2075	2720	2627
OH + H Fe	2920	2820	2673	2062	1975	2087	2773	2647
"	2980	2820	2673	2125	2037	2137	2800	2647

[ITEMS(S) FOUND IN BOOK]

Dec. 3, 1914

The Experiments

333X	Runs	30.75 - 31.65
334X	"	27.0 - 29.19
335X	"	31.32 - 31.32
336X	"	31.39 - 30.75

		At normal pitch	At accelerated pitch
333	Run 126	2260-2320	Run 127 2253-2313
334	"	2500-2167	" 2560-2218

		At normal pitch	At normal pitch
344	Run 81	380-1730	Run 82 380-1605

			At 800 R.P.M.
349	Att #2 Disc	Special	Run 96 1080-1560
	" #4 "		" 1706-1066
	" #2 "	Regular	" 1614-1654
	" #4 "		" 1174-1266

[ITEMS(S) FOUND IN BOOK]

Run 3 high

		1 Volt	½ Volt	1 Volt	½ Volt
353	Run 76	206.2	220	204.5	218.7
354	"	205.2	216.5	204	217.5

		1 Volt	½ Volt	1 Volt	½ Volt
352	Run 67	104	109	104.5	111.2
355	"	106	111.2	106.7	111.

at high water

		1 Volt	½ Volt	oct	1 Volt	½ Volt	½ Volt
358	Run 78	66.7	163.2	210	50	158.2	211.7

		1 Volt	½ Volt	1 Volt	½ Volt
359	Run 74	197.5	216.5	195.5	212.7
360	"	192.5	208.7	197	213
361	"	195	214.2	197	216

at normal rate

365	Run 62	2480 - 2360

[ITEMS(S) FOUND IN BOOK]

December 3, 1914

Fe Experiments

At 750 m.a. per Fe Pocket

			Watt	± Volt	Watt	± Volt	
381	Run 70		164	217	159.5	213.5	Regular
"	"		160	212.5	159	206	Burn [illegible]

		At 35° Fahr
385	Run 8	747 - 1580
386	"	487 - 553
387	"	1060 - 1647
388	"	1207 - 913
389	"	1487 - 367
390	"	453 - 1587
391	"	0 - 1487
392	"	420 - 1487
393	"	1200 - 180

[ITEMS(S) FOUND IN BOOK]

Dec. 3, 1914

Ni Experiments

Exp. 351 (Bismuth) Run 229

1 Volt	$\frac{9}{10}$ Volt
203.2	207

Exp. 371 Run 61

1 Volt	$\frac{9}{10}$ Volt	1 Volt	$\frac{9}{10}$ Volt	1 Volt	$\frac{9}{10}$ Volt
92.5	94.2	83.7	85.7	88	91.2

372	Run 56	1213 - 1257
373	"	1333 - 1287
374	"	1287 - 1220
375	"	1287 - 1160
376	"	1270 - 1300
377	"	1267 - 1277

[ITEMS(S) FOUND IN BOOK]

December 4, 1911

Fe Experiments

		1 Volt	½ Volt
366 A	Run 56	198	211
" B	"	198.5	211.5
" C	"	198.7	217
" D	"	198.5	213.5
" E	"	197.2	208.5
" F	"	198	210.5

		1 Volt	½ Volt
367 A	Run 50	108.7	116.5
" B	"	109.	114.2
" C	"	108.7	118
" D	"	112.5	124.5
" E	"	104	111.5
" F	"	104.2	112

		At normal rate
378	Run 57	2067 - 2167
379	"	2400 - 2360
380	"	2467 - 2193

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END

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